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ARCTIC EXPLORATION AND RESEARCH

By Professor R. N. Rudmose Brown, D.Sc.

Arctic exploration has gradually changed its motives and its technique. Geographical discovery in the far north is finished, and there need be no more arduous sledge journeys, no more grim struggles against hunger, and no more abandoned ships. The hardships of polar travel have almost disappeared, and with their elimination has gone the popular appeal which throve on disaster. And gone also has the two-volume diary of monotony as the record of the effort. But the task of the explorer is not ended. There is still much to be learned and many problems to be investigated in arctic regions. Since the poles were reached, efforts were diverted into more useful channels. And with the replacement of sail, dog and human muscle by mechanical means of transport much time has been saved and much uncertainty eliminated. Travel has become less picturesque but safer and more certain. Radio also has banished isolation, and there should be no more disappearances and search expeditions. But, perhaps most important of all, man has overcome his dread of arctic regions : he has learned how to live there without the haunting fear of scurvy. The arctic regions are coming within the range of human settlement as their economic value is appreciated. Their material value is expressed in the northward spread of claims to sovereignty, some of which have even aroused international rivalry. To-day every arctic land is actually or nominally within the sphere of one or other of the contiguous states—Denmark, Norway, Canada and the Soviet Union—and many of these lands have permanent, if small settlements, some for purely scientific purposes, others to assist in navigation of arctic seas, and others of more direct economic importance. Several arctic lands and seas came within the range of war in recent years. Spitsbergen was the scene of fighting and heroic Norwegian defence. East Greenland and Jan Mayen had their value as weather stations, and West Greenland was protected by United States forces. The desolate Denmark Strait was a busy shipping route. These active interests produced many valuable scientific data, especially as regards air movements and ice distribution. Many scientific problems can now be more clearly defined, and their elucidation rather than the charting of coast-lines commands the interest of the modern explorer. Of course, in the Antarctic the work of the pioneer explorer is not yet finished.

The scientific exploration of the north necessitates careful planning and close co-ordination between explorers. The task nowadays is to choose the areas in which specific problems can best be studied, and the explorers now must be men of scientific training rather than adventurous athletes. Of course this is not wholly a new aspect of arctic exploration. One of the earliest attempts at international co-operation was in the International Polar Year, 1882-83, when eleven states instituted observatories and others co-operated through already existing observatories. On a smaller scale this effort was repeated in 1932-33, and tentative suggestions for an International Antarctic Year have been made. Since early in the last century Denmark has had observatories in West Greenland and, since 1906, a research station on Disko Island. Since 1911 there have been meteorological stations in Spitsbergen, since 1921 in Jan Mayen, and 1922 in East Greenland. And for many years the Soviet Union has been extending a string of observatories on its arctic islands between Franz Josef Land and Wrangel Island. Canada also has its arctic stations.

Apart from research laboratories that can house workers, there is required the establishment of clearing houses and libraries at home where the field work can be planned and equipment and supplies studied and arranged. The museum aspect can well be left to existing and more popular institutions. Various geographical societies, including this Society, have interested themselves with pioneer arctic exploration, but their scope and field of interest is generally too wide to allow concentration on arctic scientific problems, some of which are only on the border line of geography. Denmark, with her interests in Greenland, began in 1879 the invaluable series, *Meddelelser om Grönland*, and Norway in 1912 began *Skrifter om Svalbard og Ishavet*, emanating from Norges Svalbard og Ishavs Undersökelser which grew out of the Spitsbergen Committee of 1918. The institute contains the most complete Spitsbergen library in existence. The Soviet Arctic Institution at Leningrad, which has published a bulletin since 1931, is rooted back in 1918 when a few workers began the scientific investigation of the Soviet Arctic lands and seas. The Institute for the Study of the North, of 1925, became the Arctic Institution in 1930. It has been very active with both purely scientific and also economic problems.

In Great Britain, the earliest attempt at a polar clearing house was made by W. S. Bruce. Inspired by Sir John Murray and the *Challenger* Office, Bruce founded the Scottish Oceanographical Laboratory in an inconvenient, somewhat squalid, building adjoining the Surgeons' Hall, Edinburgh. It was officially opened in January 1907 by H.S.H. The Prince of Monaco. The scope was wider than polar, but the main interests were arctic and antarctic. Bruce in those days was one of the few men who had experience of both far north and far south. For several years his laboratory was a rallying point of polar travellers. But too soon Bruce's failing health, financial difficulties, and the upheaval of the war of 1914-18 put an end to his hopes and schemes, and the contents of the building, collections, library and equipment, were scattered over various Edinburgh institutions. It was the loss of R. F. Scott and his south polar party in 1912 that led to the foundation, as a memorial, of the Scott Polar Research Institute, and Cambridge had the good fortune to be chosen for its site, largely because of the Cambridge associations of many prominent members of Scott's

expedition, especially Professor F. Debenham, the present Director. The Institute publishes, since 1931, *The Polar Record*, and is acquiring a comprehensive polar library not only of books and papers but also of original documents and log-books. Recently Dr. H. R. Mill presented to the Institute his matchless library of antarctic books. There is reason to hope that other private polar libraries will eventually reach this Institute.

The newest of such institutes is the Arctic Institute of North America, founded in 1944, with headquarters in Montreal but representative of both Canada and the United States. Though a private organisation, it was financed initially by grants from the National Research Councils of both countries and by donations from private sources. It is controlled by a Board of Governors and a Director. The chairman of the Board is Dr. L. M. Gould, and the address of the Institute, at least for the present, is 805 Sherbrooke Street West, Montreal. The range of interest of this Institute covers all arctic territory of North America, including Alaska, Arctic Canada, Labrador, Newfoundland and Greenland, for Greenland though politically European is geographically American, and these westward links were strengthened during the war when European ties were severed. The objects of the Institute are to initiate, encourage and advance, by financial grants or otherwise, the study of arctic problems, to collect and preserve material from the Arctic, and to arrange for the publication of papers and maps. It is recognised that many problems can be investigated only by long-time and preferably permanent arctic stations. Already the Canadian Department of Mines has built stations at Baker Lake and the mouth of the Mackenzie River.

Bulletin No. 1 (March 1946) indicates at length a "Program of Desirable Scientific Investigations in Arctic North America." This list should prove instructive reading to those geographers of limited outlook who exclude polar regions from their spheres of interest. There are the obvious problems in mapping, meteorology and climatology, the bigger and more difficult problems of the oceanography of the Arctic basin, including tidal researches, and of course geological exploration and glaciological researches. Another problem that is not stressed in this pamphlet, is that to which Professor H. W. Ahlmann recently drew attention in the *Geographical Journal* for January-February. It concerns the widespread glacial wastage in all arctic lands during the last fifty or more years, the reduction in the thickness of floes and the decreasing area covered by pack-ice. This he associates with the increased flow of warm air to the regions around the North Atlantic, the Greenland and Barents Seas, and with the northward movement of the North Atlantic low-pressure system. A number of important biological problems are also indicated, including the causes of the well-established fluctuation in the population of many species of mammals and plants, and animal ecology from many angles, and a wide range of anthropological problems regarding the Eskimo of to-day and of the long past. It will be noted that all Eskimo territory lies within the area of study delimited by this Institute. Lastly, attention should be given to the possibilities of utilising certain arctic areas for crop and livestock production, problems which are being actively studied in the Soviet Union. There is clearly abundant work for the arctic explorer of the future, but it is work that demands trained investigators.

THE PROCESS OF ENCLOSURE IN THE WESTERN LOWLANDS

By J. H. G. Lebon, B.Sc.(Econ.), Ph.D.

In a recent article [1] it was demonstrated that the most apparent features of the countryside in Ayrshire to be seen to-day were created during the last great period of sustained constructive effort in rural life which was general throughout the country, usually called the Agrarian Revolution. The fields and their fences, hedges, or dykes ; the network of metalled farm and by-roads ; the scattered stone-built, slated farmhouses with their barns and byres grouped to form a yard ; the oft-repeated lattice of shelter-belt plantations, were all the product of the generations between 1760 and 1850. Nevertheless, older and more primitive features survived into the modern period, distinguishable by careful scrutiny of old plans and comparison with the modern Ordnance Survey map : a farm boundary here, part of an old track there, and above all the names and location of the majority of farmhouses, the remnant of formerly far denser stipple, continuing in modernised and enlarged form to serve the needs of the new agriculture, but generally on or very close to the site of steadings that can be traced in old maps for several centuries, and bearing unchanged names.

The evidence adduced to support this thesis was derived from old maps portraying the greater part of two parishes, Galston and Riccarton, in Central Ayrshire. In the present article the survey will be extended to the whole of the Ayrshire Plain, and to the south of Renfrewshire, in a twofold way. First, a qualitative and quantitative assessment will be attempted of the most thoroughgoing type of rural planning (and execution) which was practised during the Agrarian Revolution. Secondly, the extent of the survival of pre-Enclosure features, especially those associated with lands held and worked collectively, will be further investigated.

I

In the previous article, during a detailed analysis of the changes wrought in two small areas, it was noted that farms on the uplands of the extreme south of Galston parish suffered a more radical transformation than those in part of Riccarton parish. More pre-1760 farms were suppressed ; there was a more ruthless re-shaping of farm boundaries to eliminate irregularities of the older boundaries which, if retained, would have hampered the creation of rectangular, equi-sized fields ; more wholesale disappearance of the older network of tracks, together with the planting of a systematic and comprehensive grid of shelter plantations. Now if the One-Inch—or, better, the Six-Inch—Ordnance Survey Map be carefully studied, it will be readily ascertained that this metamorphosis was not peculiar to a corner of Galston parish. Considerable tracts of Ayrshire, particularly towards the centre, and Renfrewshire, reveal similar features in even more marked degree. If such a transformation of the land as a whole was the perpetual legacy of the improving landlord, the rectilinear lay-out preserves the surveyor's handiwork. In the eighteenth century the telescope, tape and chain were brought for the first time to much of Scotland. These instruments enabled existing features to be represented accurately in plan ; on these plans could be superimposed the desired outlines of new fields, belts

and roads ; the surveyor could then return to the open and lay down the lines to be followed by the builders of roads and dykes, the diggers of ditches and the planters of trees. In such geometrical exercises the natural contours, and even the hydrography, were concealed. If all land was to pass regularly under the plough in a nine-year rotation (three cropped, three meadow, and three pasture),[2] fields must be of equal size, appropriate to allow control of grazing by the usual size of dairy herd, and rectangular to permit of the most economical use of the plough. To enable this rule to be adhered to faithfully, the smaller burns were frequently diverted to ditches ; only larger streams enforced a departure from the otherwise monotonous uniformity of field shape. The larger grid of shelter belts was a necessary consequence ; also the outline of roads. (See Fig. 1.)

Careful scrutiny of the Six-Inch plans of the county, and study of contemporary sources, renders it possible to distinguish the areas which were thus transformed in the century of agrarian change. It is in Central Ayrshire that we can observe the most extensive areas thus replanned and transformed. Indeed, from the south-eastern boundary of Galston parish (where we first distinguished these elements of the landscape)[1] there is a practically continuous belt extending northwards across the Water of Irvine to the uplands which extend along the boundary between Ayrshire and Renfrewshire, and southwards towards Nithsdale and Dumfriesshire. (See Fig. 2.) From north to south, in order, the principal estates are : 1. The Loudoun estates, extending from the Water of Irvine to comprise much of the improved land of the parish of Loudoun ; 2. the Lanfine estate, on the opposite side of the valley, and extending throughout the eastern half of the parish of Galston ; 3. the Montgomerie, Failford, Ballochmyle[3] and Barskimming estates, in Tarbolton, Mauchline and Stair parishes, extending for some miles northward of the River Ayr ; 4. the Auchinleck estates, in the parish of the same name ; 5. the Dumfries House estates, across the Lugar Water in the parish of Old Cumnock.

The Auchinleck estate (Fig. 1), thoroughly and comprehensively transformed, so closely adheres to a master plan that it may almost be regarded as the apotheosis of estate improvement in Ayrshire. A new straight avenue, Barony Road, was laid, leading westwards from the village of Auchinleck for three miles to the entrance to the park. On either side, approached by spur roads, are the rebuilt (and in some cases new-built) farms and outbuildings, selected to serve the needs of cultivation by the improved methods. Other older farms were erased. Shelter and ornamental tree-belts were liberally provided. Within the enlarged park extensive planting was undertaken over the sloping ground leading down to Dippol Burn and Lugar Water, nevertheless leaving room for the large Mains Farm. The old castle, on a rocky spur overlooking the Lugar Water, was left to moulder, an elegant new house being built a mile to the east. It was of this estate that Dr. Johnson, writing after a brief visit during the course of his famous tour in 1773, noted approvingly : " Auchinleck . . . was, with the rest of the country, generally naked, till the present possessor finding, by the growth of some stately trees near his old castle, that the ground was favourable enough to timber, adorned it very diligently with annual plantations. . . . Lord Auchinleck, who is one of the Judges of Scotland, and therefore not wholly at leisure for domestic business or pleasure, has yet found time to

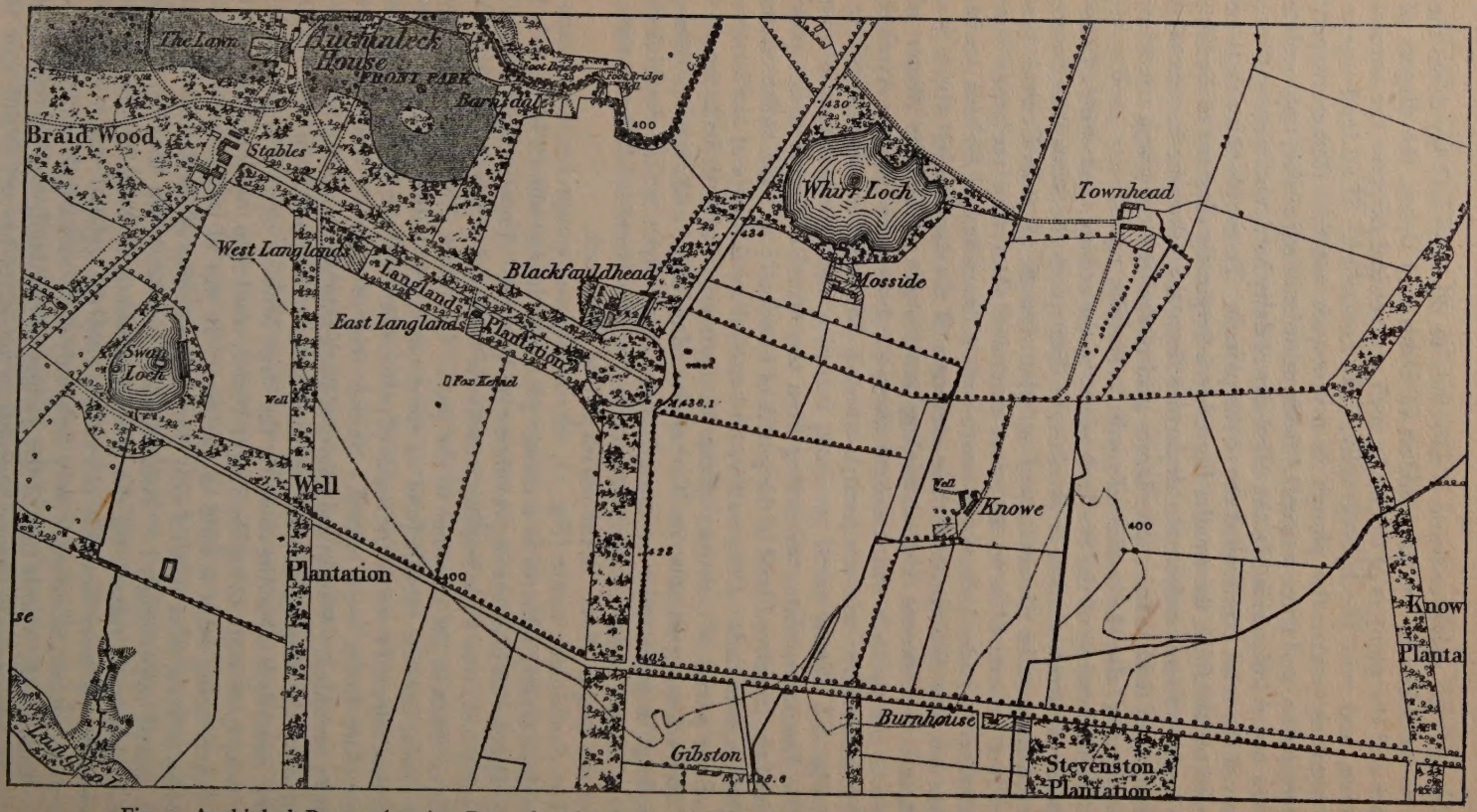

Fig. 1. Auchinleck Barony (part). Reproduced from the Six-Inch Ayrshire Sheet XXXV, First Edition, 1860, with the sanction of the Controller of H.M. Stationery Office.

make improvements in his patrimony. He has built a house of hewn stone, very stately, and durable, and has advanced the value of his lands with great tenderness to his tenants." [4]

To the west, the Auchincruive and Sundrum estates are conspicuous ; and farther north, much of Symington [5] and Dundonald [6] parishes have been given the rectilinear impress of improvement, in several separate estates. Here large parks were eschewed ; the design was evidently to ensure the most efficient lay-out, having regard to size and number of holdings, and size of fields. In Dundonald, largely co-extensive with light soils of the raised beaches, there was a strong inducement to plan the land so that a highly arable system of farming could be conveniently practised. Immediately to the north, however, the largest park in Ayrshire was created around Eglinton Castle, including much woodland, on the same raised beach soils which are so valuable and so limited in extent. Although the Mains Farm lies within the park, several square miles have been withdrawn from development as arable land to the much less productive sylviculture or the deer park. Here the desire to create grandiose surroundings to the ancestral seat proved stronger than the profit motive. Elsewhere, the conflict between agriculture and private pleasure was less acute ; though it must be remembered that in several instances parks have been created on river terraces, or near valley bottoms, where deeper and more productive soils generally occur. Often, however, the more parsimonious laird established his greater plantations on rocky braes or declivities, confining himself to narrow tree belts on more valuable improvable soils.

North and west of the Irvine (apart from Eglinton Park) comprehensive replanning decreases. Near and west of Kilmarnock, many farms have been thoroughly reorganised, to permit of efficient arable farming in a lower district : warmer, more sheltered, and with deeper soils than is usual in the county. The Blair estate (Dalry parish), the Hunterston estate (West Kilbride—again largely comprising light raised beach soils) and the Kerelaw estate of Ardrossan and Stevenston were thoroughly reorganised. Where the deep glens breaching the steep scarp facing the Firth of Clyde north and south of Largs debouch to the coast several parks were developed, Skelmorlie and Kelburn being particularly noteworthy for the large plantations clothing the rocky slopes around; Brisbane House surrounded by reorganised farms in the lower Noddsdale valley. Near the Renfrewshire border, replanning was far less common ; and there are no great country seats, save Castle Semple.

Whilst not entirely demonstrable that estate replanning of this kind can be correlated with the regions offering greatest agricultural potentialities after 1750, in many instances it is fairly clear that the heavy expenses of improvement, and still more of extending parks and building new mansions, could only be recouped from greatly expanded rent rolls. In addition, not a few proprietors found that their incomes were greatly increased after leasing coal seams underlying their broad acres. Certainly improved agriculture, and coal or ironstone mining, constituted the economic foundation of these modernised estates.[7] Also, in the Irvine valley and along the coast, between Ardrossan and Ayr, expanding industry after 1750 provided both an increasing market for agricultural products and profits which might be invested in land improvement.

II

What of the remainder of Ayrshire and Renfrewshire represented in Fig. 2, accounting for the greater part of the improved and inhabited land of these counties? Alike with the replanned estates, enclosure was universal; combined with road improvement, consolidation of holdings and limited planting, the countryside was changed and put on a new garb. But, as will be proved below, in many districts the change was less radical, less

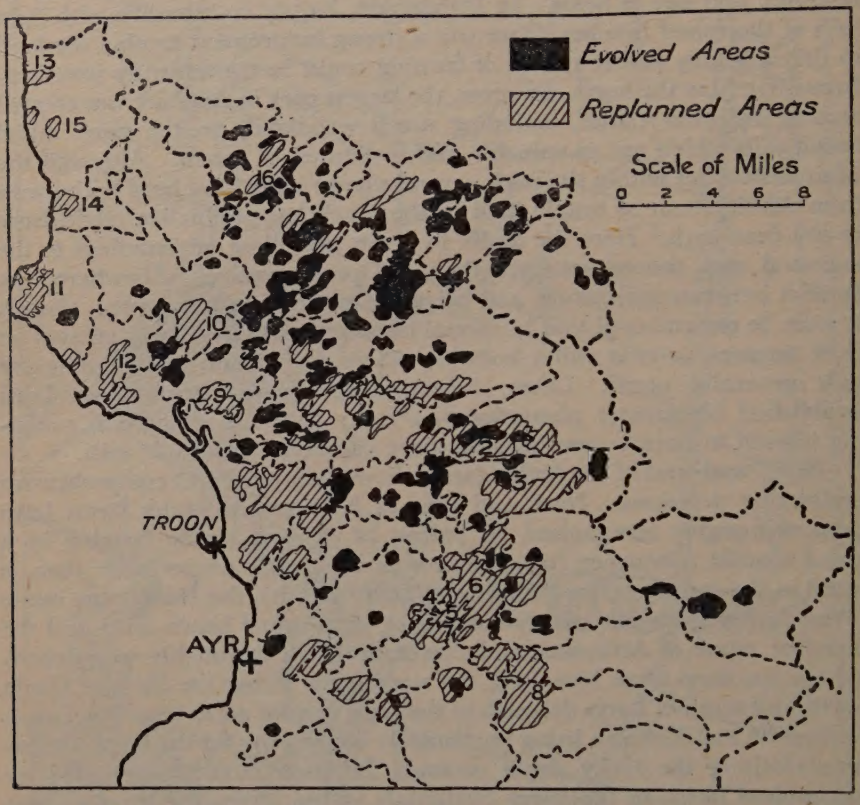

Fig. 2. The extent of replanned and evolved lands in the Ayrshire plain and South Renfrewshire. 1. Auchinleck. 2. Loudoun. 3. Lanfine. 4. Montgomerie. 5. Failford. 6. Ballochmyle. 7. Barskimming. 8. Dumfries House. 9. Eglinton Park. 10. Blair. 11. Hunterston. 12. Kerelaw. 13. Skelmorlie. 14. Kelburn. 15. Brisbane. 16. Castle Semple.

thoroughgoing, less a metamorphosis, than in the replanned estates. Here, the modern landscape grew out of the pre-Enclosure lands, and concealed within the modern pattern of enclosures are many more features of lay-out surviving unmodified from before 1750. Of such the term *evolved* lay-out may be used instead of *replanned.*

The essential distinction between the two types of lay-out can be best appreciated by analysing a portion of a Six-Inch Quarter sheet exemplifying the evolved type particularly well. Here, in the higher part of Stewarton parish, close to the Renfrewshire-Ayrshire boundary, stands a hamlet bear-

ing the name of Gabroc Hill. It consists of three farms, distinguished as Townhead, Midtown and Townend, but all known as " of Gabrochill." Less than a mile to the south-west is a similar cluster—in this case of four farms : Midtown, Townhead, Townend of Fullwood, and Fullwood (without prefix). Just to the west is a farm or cottage called Low Fullwood (Fig. 3). Winding roads of variable width, but generally narrow, connect the two clusters and provide ways to neighbouring farms and villages ; irregular small enclosures, some planted, envelop the farmhouses ; the land around is divided into an irregular mosaic or jig-saw of enclosures. Although there are a few small plantings, systematic provision of shelter belts is absent.

There is evidence that Gabrochill and Fullwood have preserved continuous existence for at least 500 years ; and hints of stages by which the present state has been reached. Taking first cartographical evidence, if we consult the Pont maps of Cunningham, reproduced in Blaeu's Atlas of 1663,[8] we find that *Gabrochhill* and *Foulwad* are both indicated in their correct positions. Written documents take us back farther. The " 10 merk land of Gabroch-hill " was granted to Gilbert, 1st Lord Kennedy, in 1452.[9] Fullwood was included in the same charter. This document is by no means contemporaneous with the establishment of the feudal system in Scotland ; but the specified extent of Gabroch-hill does probably provide a link with the twelfth century and earlier. For it has been proved that a 10-merkland valuation is equivalent to a davoch, which, on the authority of W. F. Skene, was the " old Celtic unit."[10] Hence there is strong presumption that these lands—of Gabrochill and Fullwood—were first settled and roughly delimited in the Celtic period, before the advent of the Normans and the Feudal system. They might well correspond to the *tate* which in parts of Ireland constituted the unit of land-holding under the Celtic tribal system down to the seventeenth century or later. (The *tates* were grouped into *ballybetages* ; and it is tempting to speculate whether the feudal baronies created in the twelfth and thirteenth centuries in this district—Robertland, Pokelly, Giffen, Rowallan—were co-extensive with Celtic land divisions in a district that had long been occupied.) The more modern name for the *tate* or its equivalent is townland (although the equivalent English term township is often used by writers on this subject, particularly the authors of the *Board of Agriculture Reports*, whose usage has been followed by most historical students).[11, 12] We may therefore reasonably infer that the customs of Celtic tribal land holding influenced the original demarcation and naming of these divisions and the establishment thereon of a small hamlet or cluster of houses wherein dwelt a number of families sharing the tasks of cultivation and the produce. From this co-operation (for cultivation and probably also for defence) clearly originates the association of modern farms represented on the Six-Inch plans. It is not to be supposed that co-tenancy continued to the date of enclosure. From various sixteenth and seventeenth century documents it becomes apparent that division of townlands into individual farms was quite common ; and probably lands held jointly by a number of tenants were steadily diminishing throughout the two centuries before 1750. Thus, Townhead of Fulwood, as a separate farm, belonged to a James Fergushill in 1687. Midtown of Fulwood in 1723 had not only separate existence, but was divided into two parts.[13] Having evidence, therefore, of the division of townlands long before the age of enclosure, we

can readily appreciate what sort of shape the separate subdivisions were compelled to assume. If a tract of land, a rough circle, ellipse, or irregular polygon, having a hamlet at its centre, is divided so that each farmhouse in the hamlet receives and works an equal share of the original whole, then the subdivisions must be sectors, the farm boundaries radii, and the farmhouses will be located in the angle between two radii. Later, when further subdivision and enclosure are undertaken, during the Agrarian Revolution, new field boundaries, like farm boundaries, must conform to the same radiating tendency, to allow the land to remain as accessible as practicable having regard to the eccentric position of the farm in the holding. Thus

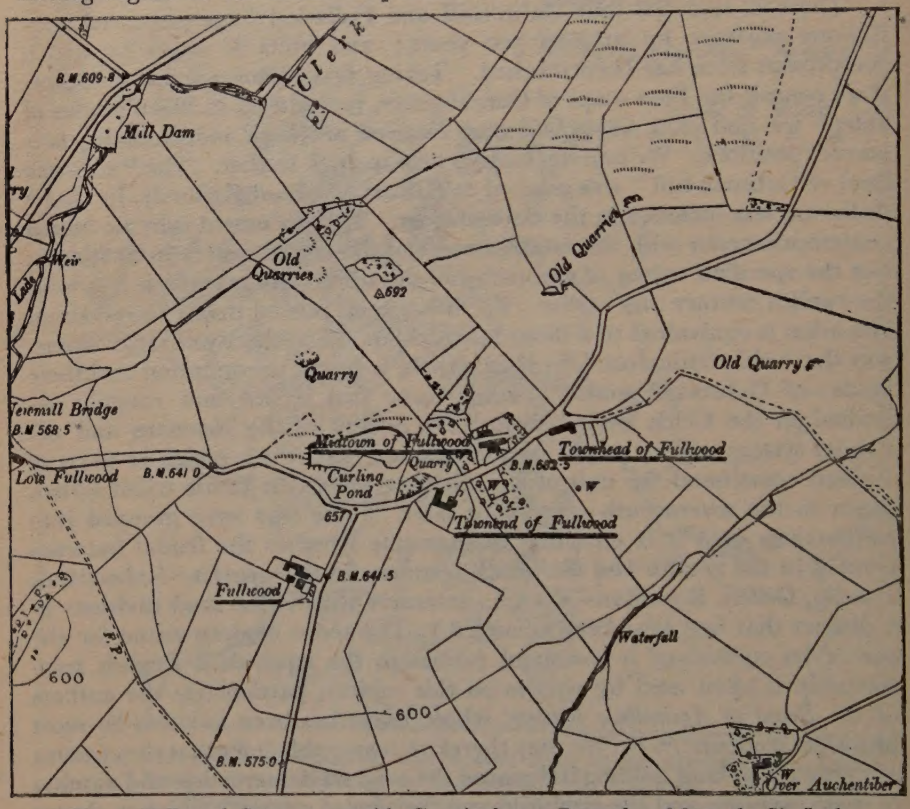

Fig. 3. Fullwood, Stewarton parish, Cunningham. Reproduced from the Six-Inch Sheet, Ayrshire, IX S.W., Third Edition, 1908, with the sanction of the Controller of H.M. Stationery Office.

there is visible to-day a kind of spider's web of field boundaries—the radiating threads being more numerous than the concentric—resulting from the division of a townland into separate holdings, and the later subdivision of these farms into enclosed fields. (Fig. 3.)

This example has been selected as the mean between the extremes of a range of variation in the present appearance of evolved lay-outs. The past association of the farms is evident ; but the present-day cluster or hamlet is open or loose. This is probably due to the early division of the townland ; once separate holdings were constituted, there was a strong incentive to rebuild farmhouses (when rebuilding was necessary or desirable) away from

the original nucleus. The new buildings would then be more conveniently situated for operating the holdings, but would not be unduly remote from the other farms of the cluster, permitting neighbourly co-operation to continue. But we know from the *Statistical Account of Scotland* and the *Board of Agriculture Reports* that co-tenancies persisted in most of Scotland until the age of enclosure, and that division of the holding was simultaneous with the creation of fields. The cheapest way to modernise such a townland after 1750 was to divide the arable land, infield and outfield, among the new individual tenancies, divide and enclose the new holdings, whilst retaining the old farmhouses, and rebuilding the latter, or extending, when funds became available. This is the logical modern culmination of slow cumulative development by stages, the later stages preserving the earlier stages as the foundation of their work, with minimal destruction of older features. Fenced and metalled, the winding, branching old tracks form the modern by-roads. Radiating fences were constructed to divide the townland from the hamlet as centre. The division into separate holdings being thus effected, each holding would be ready for subdivision into fields ; but it would be prudent not to efface the distinction between infield and outfield. To avoid creating fields containing more fertilised infield land alongside less fertilised outfield land, portions of the original infield falling to each farm might well be subdivided into smaller fields than the less valuable outfield. So, arranged concentrically around the hamlet,[14] may be visible to-day three sizes of enclosures : first, the kaleyards and orchards (persisting from pre-enclosure days) ; secondly, the small enclosures of the divided infield ; thirdly, the larger enclosures of the divided outfield. In the last-specified, there may occur smaller enclosures containing meadow parks dating before 1750, in the moist valley bottoms. The whole lay-out is much more irregular (at first glance it seems almost haphazard) compared with replanned lay-outs ; but closer inspection reveals the spider's web of radiating principal fences, and the concentric subsidiary fences separating the three orders of enclosure.

It is to be expected that such '*evolved townland*' lay-outs should exhibit wide differences of detail and many variations due to local features and the nature of older tenancies. Three examples have been selected to illustrate this. The first, representing the farms of Low and High Clews (Fig. 4), some miles S.S.W. of Mauchline, depicts with utmost clarity the three orders of enclosures which often appeared when a farm was divided and fenced : in this case, no hamlet being present, the absence of radiating fences contributes to the simplicity. Low and High Clews evidently stood apart before the Age of Enclosure ; the fence A-B was erected when two separate fenced holdings were created. Adjacent to each steading are very small enclosures (marked *) which probably constituted the only fenced lands before 1750 ; close by are smallish fields (ϕ) probably corresponding to the manured infield ; whilst the former outfield still remains but partially divided and fenced. Warnockland (Fig. 5) is a single instance of a large class of farm-groups in the Western Lowlands. The names themselves testify to the primitive co-tenancy, although a hamlet no longer exists, the process of subdivision having been accompanied by the isolation of the steadings. But radiating and concentric fences are well in evidence, especially around West Warnockland ; a name that would be inexplicable

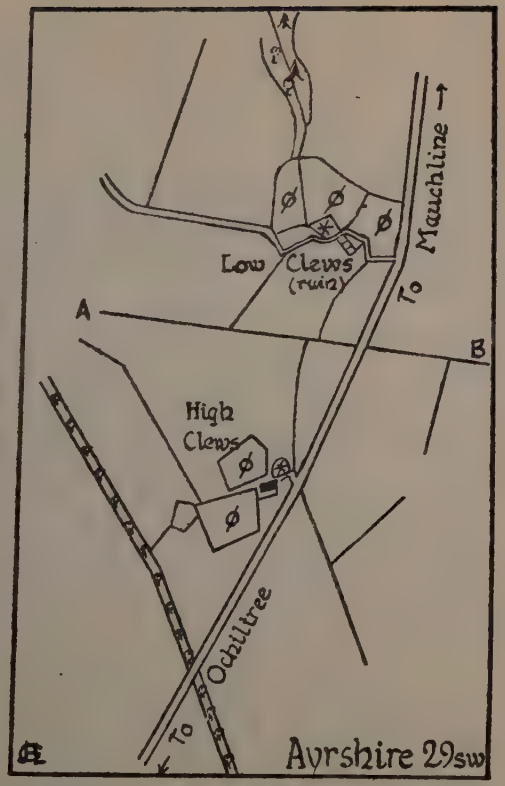

Fig. 4. High and Low Clews, Mauchline parish, Kyle.

Fig. 5. Warnockland, Fenwick parish, Cunningham.

Based upon the Six-Inch Sheets of the Ordnance Survey (1858-1908), with the sanction of the Controller of H.M. Stationery Office.

apart from the insertion of East Warnockland as a ruin on the *First* Edition (1860) of the Six-Inch plan. The consequences of close association of steadings (in fence alignment) remain to-day ; for the direct evidence of their association we must refer to older maps than the present editions. And, as on many evolved holdings, plantations are non-existent.

The lands of Threepwood, in the extreme north-east of the barony and parish of Beith, conveyed in a charter prior to 1190,[15] exemplify even more strikingly how recourse must be had to old maps to elucidate the present features of the landscape. On the Third Edition of the Six-Inch map (Fig. 6) but two farms are indicated, Threepwood and Sunnyside of

Fig. 6. Threepwood, Beith parish, Cunningham. Based upon the Six-Inch Sheets of the Ordnance Survey, First and Third Editions, with the sanction of the Controller of H.M. Stationery Office.

Threepwood. The road system bears no relation at all to these farm steadings, and forms a ganglion midway between the two. Moreover, many fences radiate from the road focus ; none from the present farms. All this becomes intelligible if we turn to the corresponding sheets of the First Edition. There the three small farmhouses of Mid Town, Main Town and Townend (of Threepwood) are shown standing, as well as the two farms which have survived till to-day. By inserting the sites of the now abandoned farms on the plan, we can readily visualise the stages by which the present lay-out of Threepwood has been attained : first, the central hamlet of co-tenants, cultivating and pasturing in common ; then perhaps concomitantly, the establishment of new farms in the outfield, the creation of individual holdings

and the construction of fences ; lastly, the abandonment of the original steadings, to permit the consolidation and enlargement of the surviving farms, though without rationalisation of enclosures or roads. Here the truth of Maitland's observation that every map is a palimpsest is fully vindicated.

It is now possible to review the extent to which the present appearance of the countryside in the Ayrshire Plain and in South Renfrewshire is due to evolution from pre-Enclosure townlands and townships. Fig. 2 reveals clearly that evolved lay-outs are distinctly localised. They are scattered and few south of the Water of Irvine. To the north, they rapidly increase to dominate the countryside. Particularly in the parishes of Beith, Dunlop, Stewarton, Lochwinnoch, and Mearns, a great proportion of improved land is describable in these terms. In Central Ayrshire, only Craigie remains influenced to any comparable extent. This suggests that an explanation may be sought in terms of physical geography and economics. Craigie is the highest parish in Central Ayrshire ; most of the country on either side of the Ayrshire-Renfrewshire boundary also lies above the 400-feet contour. These are relatively cool and wet areas, and moreover the soils are mainly heavy loams or clays. All this contributes to a type of farming almost exclusively pastoral to-day, using the land rather extensively. Thus in all probability the owners during the period of the Agrarian Revolution decided that the rate of return to thorough replanning and reconstruction of the countryside would not justify the costs, since the soil and climate would not permit the more remunerative large-scale arable farming. For pastoral farming, the irregular small enclosures resulting from simple division of a townland would be a lesser handicap than for arable farming.

Apart from this, replanning was easier on large estates ; and a contributory cause of the contrast between the countryside north and south of the Water of Irvine probably arose through the extinction of the old feudal families who for long centuries governed in Giffen, Dunlop, Robertland, and Pokelly. Their estates were broken up, and often feued during the sixteenth and seventeenth centuries ; thus a countryside divided into a patchwork quilt of small and middle-sized estates, the largest often comprising not more than two or three farms, came into existence. This state of affairs clearly was less adapted to comprehensive replanning than the feudal baronies which, in much of Central Ayrshire, remained intact till the eighteenth century.

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[14] On Sheet 72 (Glasgow) of the O.S. Popular One-Inch Map of Scotland, Tandlemuir (H 6) and Craigton (K 11) provide examples of close-knit farmhouse groups.

[15] DOBIE, *op. cit.*, p. 85.

FAIR ISLE

By George Waterston

Fair Isle is situated directly between Orkney and Shetland, lying approximately 25 miles S.S.W. of Sumburgh in Shetland (the nearest land). It measures $3\frac{1}{2}$ miles N. and S. by $1\frac{1}{2}$ miles E. and W., and shares with Foula the distinction of being the most isolated inhabited island in Great Britain. This small, attractive island is world-famous for the distinctive hosiery which bears its name, and is also recognised as being one of the finest bird migration stations in Europe. It is a fertile island, and the crofting husbandry in the southern portion compares more than favourably with similar arable land in Shetland. The cultivated area is protected from the north and west by the Ward Hill (712 feet), and the rugged sea-cliffs rise sheer in one place to 600 feet. The northern part is mainly bare rocky moorland with some fair sheep pasture. The peat deposits are nearly all worked out. In the centre of the island is a marshy hollow—the Sukka Moor—which had at one time been a mill loch ; the dam is now broken, and the burn which drains this area is the largest on the island and enters the sea on the east side. At one time it supplied power for several small Shetland ' click ' mills—now derelict.

Like Eilean A' Chleirich [1] on the west coast, it possesses a wonderful variety of scenery for its size. Lockley [2] writes :—" On the Ward Hill you might be in the glens and braes of the Cairngorms, and again at the North End you might be in a Norwegian Fjord, the overhanging cliffs are so wild and grand." The sea-cliff scenery along the north and west sides with its numerous cavernous gios, its stacks, caves, and arches, must be among the finest in Britain. (See photographs.) Here the peregrine and ravens have their eyries where they can breed without any fear of man's disturbance. In the summer the cliffs present a scene of continuous animation—thronged as they are with gulls, kittiwakes, razorbills, guillemots, puffins, and fulmars.

A prominent physical feature of the island is the Sheep Craig—a massive block of red sandstone rising sheer out of the sea on the east side of the island. It was here that the sea eagle used to breed prior to 1830. About a score of pure-bred Shetland sheep are grazed on its summit, and the islanders visit them twice a year, rowing in their small skiffs to a point on the north side from which they scale the almost perpendicular cliff by means of a chain suspended from the top. (See photograph.) The lambs are lowered to the boats by ropes. This hazardous undertaking can be accomplished only in favourable weather conditions.

Since the days of the Vikings, the summits of the Ward Hill and Malcolm's Head have been used as ' look-out ' posts to give warning of the approach of enemy forces. The Ward Hill was one of the sites of a beacon to warn Earl Paul in Orkney [3] of the approach of enemy forces from Shetland in the year 1135. Malcolm's Head, to the south, was used as a Watch Tower during the Napoleonic Wars. (There is a tradition that three Fair Isle men took part in the battle of Waterloo.)

There are two lighthouses maintained by the Northern Lighthouse

Commissioners ; one at the north end and the other at the south. Both suffered bomb damage in the recent war. Prior to the erection of these warning beacons in 1892, the island was all too often the scene of destruction of many a fine sailing ship. Mr. R. Stuart Bruce [4] has already published a most comprehensive list of all the wrecks which have been known to occur on Fair Isle. There are records of over fifty vessels having come to grief on its wild and inhospitable shores.

One of the earliest and most noteworthy of these wrecks was that of *El Gran Grifon*, a hired ship of Rostock of 650 tons and carrying 38 guns, the flagship of the 8th division (transports and storeships) of the Spanish Armada. It was commanded by Don Juan Gomez de Medina and carried 243 soldiers and 43 marines. We are greatly indebted to Major Martin A. S. Hume [5] for a translation of a manuscript in the Royal Academy of History, Madrid, which gives a most vivid eye-witness description of the adventures of the ship-wrecked men on the island : " We found the island peopled by 17 households in huts, more like hovels than anything else. They are savage people whose usual food is fish, without bread except a few barley meal bannocks cooked over the embers of the fuel which they use, which they make or extract from the earth and call turf. They have some cattle—quite enough for themselves for they rarely eat meat. They depend mainly upon the milk and butter from the cows, using the sheep's wool principally for clothing. They are a very dirty people, neither Christians nor altogether heretics. It is true that they confess that the doctrine that once a year is preached to them by people sent from an island nine leagues off, is not good ; but they say they dare not contradict it, which is a pity. 300 men of us landed on the island, but could save none of our provisions. From that day, 28th September till 14th November, we lost 50 of our men, most of them dying from hunger, amongst others the master and mate of the ship." Andrew Umphray of Berry sent a vessel to Fair Isle to the Spaniards' assistance, carrying them to Quendale from whence they re-embarked for Scotland en route for Spain.[6] The party of Spaniards met with a kind reception at Anstruther in Fife [7] on their way back to their native land ; and it is said that the Duke never forgot this when subjects of Scotland called " either in mercy or otherwise " on him. Mr. R. Stuart Bruce records that when in Fair Isle in 1935, Mr. H. V. Morton greatly relished getting from the lips of the postmaster the genuine unwritten island tradition that, when the Spanish soldiers advanced across the island in a body, their steel cuirasses glistening and gleaming, the puzzled and alarmed islanders thought they were a ' heavenly host ' !

There has been considerable controversy on the origin of the colourful hand-knitted Fair Isle hosiery, and it is held by many that the intricate patterns originated from the Spaniards. Evidence has been given that certain patterns are identical with old Spanish ones. On the other hand, similar patterns of fancy knitted goods have been used since time immemorial in nearly all the Scandinavian countries. It is of interest to note; however, that prior to the Great War (1914-1918) the well-known Fair Isle designs were mainly confined to the island, and it was not until after the war that Shetland women started knitting similar patterns. O'Dell [8] has stated that, " whatever their ultimate origin in antiquity, the Fair Isle patterns are due to Scandinavian or at least to Central European influence, and this view

WARD HILL AND WEST CLIFFS

FAIR ISLE

GIO BELOW WARD HILL

THE STACKS OF SKROO

THE HAA

ASCENT OF SHEEP CRAIG

WORKING WITH SHETLAND SPADE (1918)

FAMILY KNITTING

WINNOWING (1918)

is possibly supported by the comparatively recent publication of a book of old Faroese knitting-patterns, many of which strongly resemble the Fair Isle ones. The patterns probably came from Central Asia, and the route may have been via the Moors and Spain, or via the traders of Northern Europe."

To-day, the hosiery industry provides a valuable cash income to nearly all the crofts on the island. The genuine Fair Isle hosiery is marked with a branded trademark "Fair Isle made on Fair Isle" as opposed to "Fair Isle made in Shetland." The goods are sold mainly to private customers. As stated by O'Dell, "now that the manufacture of 'Fair Isle' hosiery has spread over the whole of Shetland on a basis of chemical dyes, Fair Isle itself is reasserting its special importance as the only place where the making of natural dyes from lichens, flowers, etc., for the whole gamut of colours used, is understood and practised."

Transport communication with the mainland of Shetland is maintained weekly—weather permitting. Mails and freights are transported to Grutness in a forty-foot motor fishing boat, *The Good Shepherd*, owned by six of the islanders and financed by an annual grant from the G.P.O. In the winter, owing to the exposed anchorage in the North Haven, the boat has to be pulled up on a slip-way after each trip. The island is served with two landing quays. Both are very exposed, the North Haven being the most sheltered, at least from the south and west. Both jetties are equipped with cranes; but *The Good Shepherd* can approach only the jetty at North Haven at full tide. This necessitates the transference of all freights and mails into a 'flit-boat' to convey them ashore.

During the recent war, an emergency landing-strip for aircraft was constructed on the side of the Ward Hill. Provided the present landing-strip could be enlarged and properly surfaced, and another transverse strip made, it would be possible to introduce an air service linked up with the present Orkney inter-island services. The introduction of air transport would, however, bring many attendant problems as well as obvious advantages. Apart from carrying mails, the boat is essential to the island community for the marketing of their produce. There is a danger that if a regular air service were established the islanders might lose the mail contract without which it would be quite impossible to operate the boat economically. Even were the mail contract to be shared, the consequent heavy increase in freight costs would be a serious obstacle to the maintenance of any economic form of marketing. It is interesting to observe, however, that air transport has been welcomed to North Ronaldsay where the transport of freight must present just as serious a difficulty. Whereas the islanders, prior to the war, were much averse to the introduction of air transport, there is now no doubt in their minds that a 'By Request' air service would be a great boon; such a service would seem almost essential from the medical point of view, as there is no resident doctor. It is almost certain that, unless something is done to render inter-communication between Fair Isle and the mainlands of Orkney and Shetland more readily available, the population of the island will continue to dwindle. Prolonged isolation of an already inbred community may rapidly lead to its extinction.

The war has had a most disturbing effect on the young people, the

majority of whom were serving in one or other of the Services. Many of them have become dissatisfied with the loneliness and lack of amenities on the island. The crofters are by no means badly off, and it must not be assumed that the young folk are necessarily forced to leave the island through economic causes. The reasons for depopulation in isolated areas of the Highlands and Islands seem to be largely psychological ; it would appear that when a community drops below a certain population threshold, then the rot sets in. On Fair Isle the danger stage may soon be reached when there will not be sufficient young men on the island to carry out the necessary public services, such as manning the mail boat, etc. Most of the islanders too are closely related, and this close relationship will soon assume dangerous proportions eugenically. Fair Isle is becoming increasingly peopled with old folk, relying to a great extent on old age pensions and other grants. The island population has dwindled from 'some 300' in 1865 to about 80 at the present time ; there were 77 pupils attending the school in 1831—there are now but 3 !

The crofters up to fifty years ago relied to a great extent on fishing for a livelihood. The blood of generations of Viking ancestors still runs strongly in their veins and their masterly handling of the small 'sixerns' in a rough sea is a treat to behold. The Fair Isle skiffs—like the Shetland boats—are almost identical in shape to similar craft in Norway. In the old days the islanders made their own boats to a design peculiar to the island and they used to cover amazing distances in them. Stories are told on the island of one man who rowed all the way to Kirkwall and back ; and of a couple who rowed to Sanday in Orkney to get married and were drowned on the return journey. Fair Isle skiffs were frequently rowed to North Ronaldsay.

The Norse influence is very strong on the island ; this is not surprising when one recalls that the island was under Norse rule until 1460 when it passed in pawn to Scotland. The islands were never redeemed and so Shetland changed hands. As Mais[9] states, "this meant the exchange of good rule for bad, for the islands then became the dumping ground for the worst sort of Scots adventurer. The people were oppressed, and feudalism which was good was supplanted by feudalism which was thoroughly bad. The fishermen, for instance, were compelled to deliver all the fish they caught to their landlord who paid them less than 2s. per cwt. of salted fish which were sold for 19s. in the Scottish market." In the seventeenth century a Hamburg merchant had a booth down near the South Harbour.

I am indebted to the late Mr. William Traill of Papa Westray for a MS. copy of a "Report respecting the Fair Isle" compiled by Patrick Fotheringham in 1804, in which it is recorded that "the chief support of the inhabitants depends on their success in fishing which is pursued with the greatest diligence and attention. There are at present on the island eighteen fishing boats in each of which three men are usually employed. From the best information that could be obtained, the fishing, over and above what is consumed in the island, annually produces about 600 ling, 2000 cod, and the same quantity of saithe. These produce about 20 barrels of oil and the whole are always sold to the proprietor at the following prices : 3s. 6d. per doz. of ling, 1s. per doz. of cod, 9d. per doz. of saithe, and the oil at £1 per barrel. The proprietor finds salt for curing the fish, with casks for the oil."

Nowadays there are only a few boats which go to the fishing, and that solely for consumption on the island. It is impossible for the islanders to compete with the trawlers and seine netters, and so they have taken more and more to the land.

As has been remarked earlier, the agricultural area on Fair Isle compares more than favourably with most parts of the mainland of Shetland. Many changes have occurred in the last hundred years ; but in spite of this the islanders still use heavy oxen for carting and ploughing. Shetland ponies existed on the island in former times and must have been there in the days of the Norse inhabitants as is evidenced by the name " Hesti Gio," or Horses' Gio, near the south end. In 1804 there were 80 head of cattle and 70 Shetland horses on the island. The latter were employed solely for bringing home the peats. The number of sheep on the island at that time did not exceed 400. The wool was then carded, spun, and knitted into stockings and gloves, which, together with fresh vegetables, were often bartered to the many vessels which used to pass close in to the island. Nowadays all the wool is sent to Scotland to be spun.

The main crops are oats, potatoes, and turnips ; also a little barley. Prior to the Great War the corn was ground in the ' click ' mills ; now it is used mainly for feeding the poultry and cattle. In 1918 (when Mr. James Linklater's photographs were taken) large areas of arable ground were dug by hand with the Shetland spade—up to four persons working close together and turning the soil in large clumps.[10] Harrowing used to be done by hand ; corn barley was bruised in ' knocking stones ' in the same manner as is shown in Holbourn.[11]

No account of Fair Isle would be complete without some reference to its natural history—and its birds in particular.

The island has a field mouse—*Apodemus f. fridariensis*—peculiar to it. Atlantic seals breed in some of the caves. There are no rats, but rabbits abound.

Over 180 different species and sub-species of wild flowers have been collected on the island.

It is, however, as a bird migration station that Fair Isle has become so well known. Standing as it does in such an isolated position, it acts as a ' stepping stone ' for migratory birds travelling up and down the east coast of Britain. Here one can get an opportunity of seeing some of the rarer passage migrants such as scarlet grosbeaks, ortolan and Lapland buntings, many rare members of the warbler family, and the beautiful bluethroat. Fair Isle was first brought to the notice of ornithologists by the late Dr. W. Eagle Clarke [12] who started his investigations in 1905. Research work was subsequently carried on by the late Duchess of Bedford, the late Surgeon Rear-Admiral J. H. Stenhouse, and many others. To-day, the island is recognised as being second only to Heligoland as a bird observatory. Two hundred and ninety different species and sub-species have been recorded to date on this small treeless island, and many of them have been recorded in no other part of the British Isles. A Bird Observatory has now been established with a trapping and ringing station. Passing migrants are caught alive in a large wire-netting funnel trap similar in construction to those formerly used on Heligoland. The birds are ringed with small aluminium rings so that they can be subsequently identified.

Many of the islanders are interested in natural history ; and indeed Fair Isle has produced some of the finest field naturalists in Great Britain.

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SOME NOTES ON THE SCOTTISH SETTLEMENT IN DARIEN

By George Pratt Insh, C.B.E., D.Litt.

I

In *La Crise de la Conscience Européenne*, his brilliant and penetrating survey of the intellectual development of Western Christendom during the vital transitional period 1680-1715, Paul Hazard finds nothing in the troubled but fascinating history of the Scotland of that age to merit even a passing glance.[1] It was, of course, a generation or so before the emergence of that period of Scottish dominance of the European world of the intellect which was to call forth the querulous remonstrance of Voltaire. One name, however, that of Sir Paul Rycaut, King William's representative at Hamburg, a name familiar throughout Scotland in the closing years of the seventeenth century, and evocative, in those hyper-sensitive days, of curses both loud and deep, does find a place in Hazard's comprehensive muster-roll of philosophers and men of letters : but the Rycaut whom Hazard delights to honour is not the elderly Rycaut of the notorious *Memorial to the Senate of Hamburg*, but the youthful Rycaut whose *Present State of the Ottoman Empire*, published in London in 1668, was translated almost immediately into French and Italian and, a decade later, into Polish and German.

When we turn from the men of letters to the travellers of the latter part of the seventeenth century, those world explorers whose vivid narratives, like those of Hakluyt in Elizabethan days, were potent to kindle the imagination and to impart the urge to intellectual adventure, we find in Hazard a similar indifference to what was happening in Scotland. Among his voyagers and explorers he finds a place for Dampier—and for Wood Rogers —but makes no reference to Dampier's whilom buccaneering companion Wafer. Yet for the Scotsman of that age, for gentle and simple, for the retiring but speculative student as well as for the enterprising and sanguine merchant, the names of Dampier and Wafer were indissolubly linked

together. " I doubt not that you will have Wafer and Dampier's Voyages aboard. These you will read, and many of their particulars that Wafer or Dampier speak of you need only confirm quhat they say, or tell me quherin they are mistaken " : thus in the summer of 1700, from his secluded retreat in the Library of Glasgow University, Robert Wodrow wrote to a ministerial friend who, ignorant as yet of the melancholy fact that the gold and crimson flag of Spain floated above the ramparts of Fort St. Andrew, was contemplating hopefully the Darien venture and looking forward to joining the Rev. Alexander Shields and the Rev. Francis Borland in the far-distant Presbytery of Caledonia.[2]

Nor were the Scots content merely with the reading of Wafer's *New Voyage and Description of the Isthmus of America*. Wodrow used the first edition, printed at the Crown, in St. Paul's Churchyard in 1699 ; the Directors of the Company of Scotland Trading to Africa and the Indies were intimately familiar with a manuscript copy of the *Description* which formed part of the collection of " Manuscripts, Books, Journals, Reckonings and illuminated Maps and other papers of Discovery " presented to them by William Paterson some three years previously. As the time for the dispatch of their first expedition to the Isthmus drew near, the Directors contemplated the possibility of enlisting Wafer in their service. " You would also engage Mr. de la Waffer who was Chyrurgeon to Capt. Dampier [a retrospective promotion] at £3 or £4 per month "—so runs one section of the instructions issued on 30th January 1698 by the Court of Directors to a representative they were sending to London. And as the outcome of the London negotiations Wafer set out for Scotland, crossing the Border under the name of Mr. Brown, and had two very strange interviews with the Directors: the first at the home of Fletcher of Saltoun, near Haddington, and the second in one of the tall lands of Edinburgh to which he was brought under cover of night.[3]

II

While the story of Wafer's visit to Scotland has about it a certain romantic interest that makes it read almost like part of a romance by R. L. Stevenson—and indeed an ancestor of R. L. S. was one of the Directors who signed the instructions for the engagement of Wafer—and while the record of the experiences of the buccaneer surgeon had a very powerful influence on the policy of those who were responsible for the attempts to settle on the Isthmus, the deeper significance of the relations between Wafer and the Company of Scotland lies in the part they played in one of the many contests that marked the course of the tragic history of the Scottish effort to share in that movement for the expansion of trade which was characteristic of Europe at this epoch.

Of the many contests that reduce the history of the Company almost to a constant record of storm and strain two may be singled out as of special significance to students of the influence of geographical factors in history : (1) the contest between the original policy of the Company, of an Indian and African trade, and the project of the settlement on the Isthmus ; (2) the rivalry of East and West, of the Forth and the Clyde, as the base for Transatlantic trade.

In regard to the first of these contests it is worth while bearing in mind

that the greatest authority on colonial history of our time, Professor C. M. Andrews of Yale, has stated emphatically that the real significance of the Company of Scotland lay in its challenge to the monopoly of the English East India Company and that the Darien settlement was really a minor issue. It was this challenge that evoked the reaction which in the closing weeks of December 1695 crushed the very promising inauguration of the London branch of the Company; it was this reaction that moved the English commissioners who in 1706 were negotiating the Union to insist that in the United Kingdom there could be only one East India Company, and that the Company to survive could not be the Scottish one.

The motif of Eastern trade is strong in all the early deliberations of the

Fig. 1. The Arms of The Company of Scotland Trading to Africa and the Indies (1695).

Company both in London and in Edinburgh.[3] The 29th of August 1695 saw the first meeting in London of "The Gentlemen concerned in the Company of Scottish Trading to Africa and the Indies"—the Act of the Scottish Parliament establishing the Company had been touched with the Sceptre by the Commissioner on 26th June. On 22nd November the Court of Directors, meeting in London, closed the book of subscriptions, "finding that the complete sum of £300,000 is subscribed therein." Five days later the Court of Directors, under the chairmanship of Lord Belhaven, had before them a motion to send "some Ship or Ships with all Expedition to the East Indies to secure a settlement for this Company." On 4th December the Directors resolved "that one or more Ship or Ships be fitted out for the East Indies with all convenient speed."

III

The Court of Directors met for the last time in London on 6th December 1695. Under the combined assault of Lords and Commons the London life of the Company came to a speedy close. When in the spring of 1696 the books of the Company were opened in Edinburgh and, under the combined stimulus of commercial ambition and national indignation, subscribers thronged to put down their names, it was still the East that stirred the imagination with its wealth and its wonders. "You shall repair to such places beyond the seas as the Committee of Trade of this Company, or any three of them shall direct, where you shall inform yourselves of the best and most expeditious way of purchasing or building five or six ships of about 600 tons each, well and sufficiently built and such as are fit for voyages to the East Indies": this direction stood first in the instructions issued by the Court of Directors to Alexander Stevenson, Merchant in Edinburgh, and James Gibson, Merchant in Glasgow, on 23rd June 1696.[4]

It was in this same month of June 1696 that Paterson paid a visit to Glasgow and in company with the Lord Provost rode down the riverside to Dunbarton. The purpose of this visit was "to view the river of Clyde and to consider what place may be fittest to be appointed for the ships belonging to the Indian Company." In the light of our knowledge of the previous history of Paterson and of the subsequent history of the Company we can hardly avoid the conclusion that this visit to Clydeside and the inspection of the approaches to the Atlantic were symptomatic of a coming change in policy.

A month after Paterson's Clydeside expedition the Committee of Foreign Trade had before them "several Manuscript Book, Journals and other papers of Discovery in Africa and the East and West Indies produced by Mr. Paterson": Paterson also laid before the Committee "several designs and Schemes of Trade and Discovery." A week later these projects and the accompanying documents were brought to the notice of the Court of Directors. Whatever may have been their private reactions to those dazzling proposals for which Paterson had sought in vain all over Europe for a sponsor—in 1688 he had laid his scheme for an "American Company" before the Elector of Brandenburg—the Scottish Directors proceeded with purposeful caution. They made no public announcement of any modification of their policy. They resolved "that some particular discoveries of the greatest moment to the designs of the Company should be committed to writing, sealed and kept in safe custody"; and Paterson was encouraged "freely to bestow all his pains and time henceforward in prosecuting the undertaking." A few weeks later an Edinburgh physician and four assistants received instructions to prepare medical stores for an expedition of fifteen hundred men for two years. Arrangements were also made for collecting, on a large scale, provisions and trade goods.

IV

Despite his collections of Maps and Journals and the deductions he made from them Paterson had no personal knowledge of Darien. This is one of the relatively few facts that stand out with certainty in his early and very enigmatical career. He did not set foot on its shore till he landed from the Company of Scotland's ship *Unicorn*.

The one authority on Darien at this time was Wafer, who had not only crossed and re-crossed the Isthmus with the wild brotherhood of the buccaneers but had also lived among the Indians for several months while recovering from an injury. Even Dampier conceded the outstanding claim of his old companion to speak with knowledge and insight concerning the Isthmus and its problems and possibilities. " I might," wrote Dampier in concluding a very brief account of his Darien days, " have given a further account of several things relating to this Country ; the Inland parts of which are so little known to the Europeans. But I shall leave this Province to Mr. Wafer who made a longer abode in it than I ; and is better able to do it than any man that I know, and is now preparing a particular Description of this Country for the Press."

It was this particular Description, " The Form and Make of the Country,

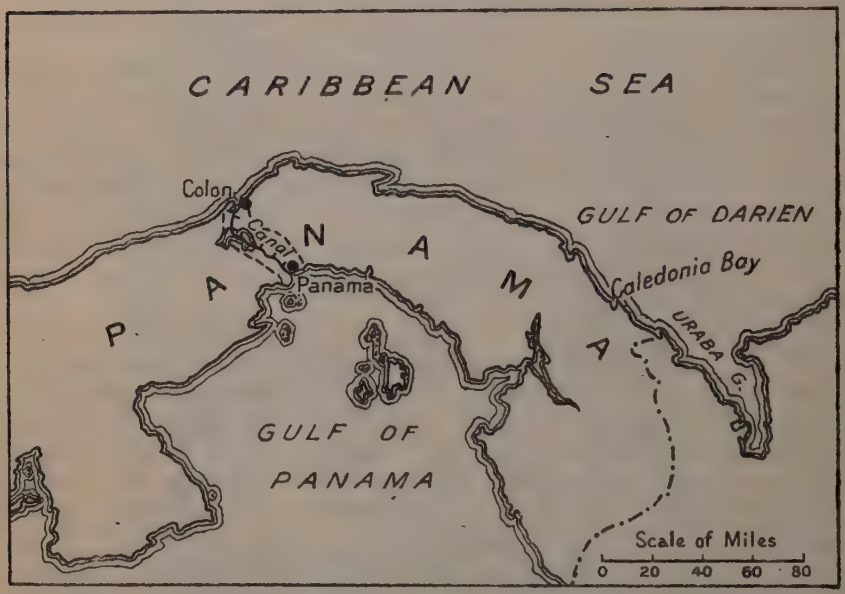
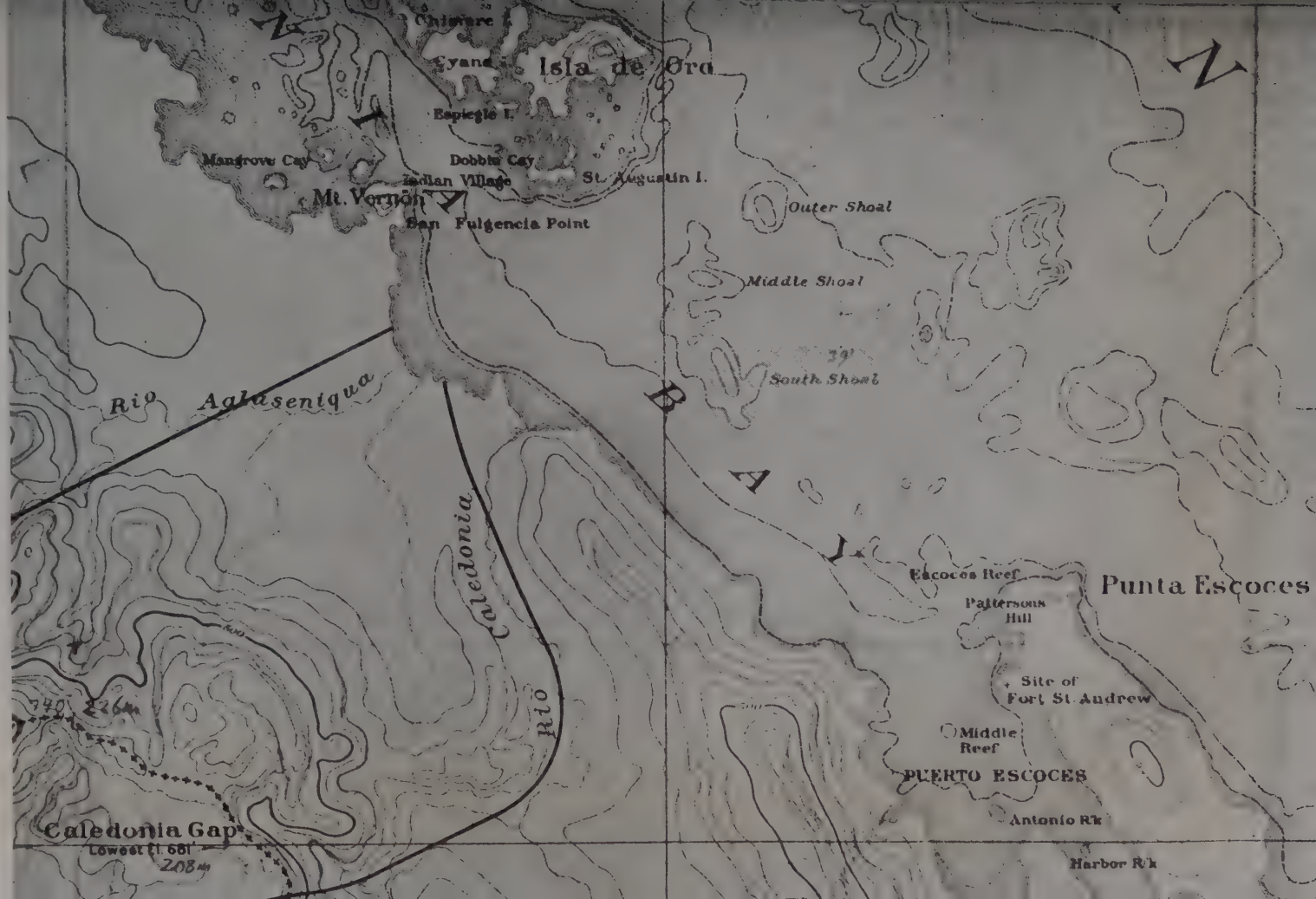


Fig. 2. Isthmus of Darien, and location of Caledonia Bay.

the Coasts, Hills, Rivers etc., Woods, Soil, Weather etc., Trees, Fruit, Beasts, Birds, Fish etc." that, under Paterson's guidance, was studied by the Scottish Directors with a minuteness and persistency that astonished even Wafer himself when he talked with them. To the study of the particular Description was added that of a Memorandum which Wafer brought north with him. " A short Description of the heads of my Journal concerning the Isthmus of Darien relating to the Ports, Rivers, Harbours, Islands, Bays on the North and South of that part of the Isthmus the free Indians inhabit." The study of these two documents was supplemented by the discussions at Saltoun Hall and in Edinburgh, and the influence of Wafer's experiences can be traced in many parts of the History of the Darien Expeditions. That influence is particularly noteworthy in the Secret Sailing Orders—the First Expedition left Leith under sealed orders that were to be opened on reaching the latitude of 31 or 32 degrees, or in case



SITE OF THE SCOTTISH SETTLEMENT IN DARIEN

PUERTO ESCOCÈS NEAR MOAT OF FORT ST. ANDREW

AN INLET
PUERTO ESCOCÈS

W INTO CALEDONIA BAY

PUNTA ESCOCÈS
LOOK-OUT STATION (PATERSON'S HILL)

of separation at Madeira. The sealed orders consist of a set of general instructions accompanied by two supplementary sets of directions. Taken together these documents reveal very clearly the very great care that had been taken to ascertain the possible locations for a colony in the Caribbean ; they make it clear that the Scots, far from blundering rashly into Spanish colonial dominions, had endeavoured to acquaint themselves with the significance of a possible Isthmian settlement from the standpoint of International Law.[5]

V

Space, however, forbids a more detailed discussion of the influence of Wafer's geographical treatise on the history of the Company of Scotland, and I turn now to the second point I have suggested as worthy of consideration : the rivalry of East and West, of Forth and Clyde, as Transatlantic bases.

This problem takes us fairly deeply into the big movements of our Scottish social, economic, and even political history. For centuries the Scottish merchant, the Scottish scholar, the Scottish soldier of fortune had looked across the North Sea to the Europe that had offered them a living, a competence, and not seldom a career of distinction ; and this tendency persisted, despite the challenge of the voyages of the Age of Discovery and of the colonisation carried on so energetically by Spain, France, and England. It is true that in the closing years of the sixteenth century the good folks who directed the affairs of the Burgh of Aberdeen had their minds stirred by the contemplation of a world wider than that which their forebears had known. On the 25th of January, 1597, the Provost, Baillies and Council ordained the Dean of Guild to pay Robert Lindsey, pilot, the sum of forty merks " for ane gratitude for the sey kart presentet this day be him to the provest, baillies and counsell, conteining money guid profitable vreitis, instructione and devyses necessar for sic as treddis on sey to ony forane countreis, viz. : the Haill universall sey kart of Europe, Affrica and Asaia and new found landes of America." [6] But it was probably long after the acquisition of this " sey kart " that any Aberdeen shipmaster steered his ship north about and braved the storms of the Atlantic.

The first challenge to the old order came, strangely enough, not from a shipmaster but from a poet, Sir William Alexander of Menstrie, who, in response to the urging of his fellow-courtiers to take part in those colonial activities that were popular in the Whitehall of James I, had declared that his countrymen " would never adventure in such an enterprise, unless as it were as there was a New France, a New Spain, and a New England that they might likewise have a New Scotland." Alexander sent the ship which he procured in London in March 1622 round to Kirkcudbright " that the businesse might beginne from that kingdom which it did concern." Another port which Sir William used for his Nova Scotia ships was Dumbarton. And, when after some years of delay and vexation it looked as if his Nova Scotia colony might eventually flourish, Sir William greeted his advancing good fortune with a twofold gesture : on the Castle Hill at Stirling he had built for himself a mansion that still stands; and at Largs, on the Firth of Clyde, he acquired land that was to be the site of the *staple* of his colonial trade.

Half a century later, at the time of the establishment of the Quaker-Scottish settlement of East New Jersey and of the Covenanters' settlement of Stuart's Town in South Carolina, the matter was still undecided. The New Jersey enterprise was, in the beginning, largely an East Coast venture —the first Governor of the Colony was Robert Barclay of Urie. During the summer of 1684 two ships cleared from East Coast ports : one from Montrose, the other from Aberdeen. And though in the following year George Scot of Pitlochie had agents in Dumfries, Kirkcudbright, Ayr, Irvine, Kilmarnock, Glasgow, Stirling, Montrose and Aberdeen, his ship the *Henry and Francis* of Newcastle was scheduled to " take in passengers and goods at Leith, and Passengers at Montrose and Aberdeen and Kirkwa' in Orkney, and set sail thence for East-New Jersey against the 20 day of July, God willing."

In the summer of 1684 the Covenanters setting out for the colony of refuge in South Carolina sailed from the Clyde on board the *Carolina Merchant*, belonging to Walter Gibson, merchant in Glasgow ; her captain was James Gibson, later to act as Agent for the Company of Scotland at Amsterdam and to command the Company's ship, the *Rising Sun*. The *Carolina Merchant* was advertised as " bound for the Bermudas, Carolina, New Providence and the Cariby Islands." As part of his merchandise for the Plantations Walter Gibson had shipped thirty-five prisoners—a gift to him from the Tolbooths of Edinburgh and Glasgow.[7]

In this matter of shipping prisoners to the plantations the Glasgow merchant had a rival in Edinburgh. George Malloch, a merchant of the capital, besought the Privy Council to prefer his ship to that of Gibson : the reasons he annexed to this request were that there was less chance of the prisoners escaping and that the expense of transporting them to Greenock would be saved. Unfortunately there was sufficient of this tragic merchandise for both ships : when Malloch's ship cleared from Leith Roads she carried 150 prisoners gifted to him by the Privy Council.[8]

In this era of New Jersey-Carolina emigration the balance would seem to swing very decidedly in favour of the East Coast ports. It was a very different matter a decade later when a reckoning was made of the ships bringing contraband tobacco from the Plantations to Scotland. In a list of ships trading to and from Scotland to the tobacco Plantations from 13th April to 29th December 1696 are included, in addition to certain colonial vessels, particulars of 13 Scottish ships : 12 of these belonging to the Clyde —8 to Glasgow, 2 to Greenock, 1 to Irvine, 1 to Largs ; the Forth is represented by a single vessel belonging to Queensferry.[9] So perturbed were the English Commissioners of Customs at this time by the extent to which this illicit traffic between the Clyde and the Plantations was carried, that the English Admiralty arranged for a frigate to cruise in the lower reaches of the Firth to interfere with the systematic coming and going of the tobacco ships.

By the summer of 1696, when Paterson visited Glasgow, it would appear that the claim of the Clyde to be used as the base for his Caribbean colony had been well established. Yet once again Paterson was in advance of his age ; just as his project of an Isthmian settlement was put forward two centuries before the construction of the Panama Canal, so was his challenge to long-established Scottish mercantile and social conventions and customs

advanced a generation before it was likely to receive an unqualified acceptance. It was in June 1726 that Wodrow, surveying from his study in the old Manse of Eastwood the changing Scottish scene, noted the almost successful attempt by Glasgow to wrest from Edinburgh the hegemony of the Royal Burghs—" to shake off," as he puts it, " the yoak the toun of Edinburgh had wreathed about them." [10]

The strength of this yoke was reinforced by the fact that not long after his Clydeside visit Paterson, owing to an unfortunate financial transaction, was dropped from the Council of the Directors. The Directors, however, retained his manuscripts and maps—they gave him £150 stg. in return for them. They retained also his project of a Caribbean settlement. The ships that had been built abroad, the *Unicorn* in Amsterdam, the *Caledonia* and the *St. Andrew* in Hamburg, were at the beginning of the winter of 1697 brought over to the Forth. From Leith Roads they were taken over to Inverkeithing ; from Inverkeithing they were moved to Burntisland, where they loaded the provisions and cargoes that had been stored in the Company's warehouse at Leith. It was from Leith Roads that the fleet sailed under the sealed orders that were to direct them to the Caribbean.

But geography was to prove too strong for Scottish tradition, whether social or economic. The voyage north-about to Madeira was a trying experience. When the ships reached the Orkneys the northern mists closed around them, the northern gales scattered them. It was a battered fleet and a chastened company that reassembled at the Madeiras. " For God's sake," wrote Paterson from Madeira to Principal Dunlop of Glasgow, " minde is with supplys from Glasgow for to have any more ships sail from the firth is Destruction it being worse and far more hazardous than an Indian voyage to sail Roond." And the addendum to the official report sent home to the Directors from the Council in Darien, though naturally more restrained in expression, is equally unequivocal in purpose : " You'll understand by our's from Maderas the Danger as well as the Tediousness of the Passage North-about, so that if the ships can conveniently be fitted out from Clyde, it will save a good deal of time in their passage and be far less hazardous."

The lessons of the winds and the seas and the Atlantic approaches were taken to heart. It was found convenient to fit out ships at the base recommended by Paterson and his fellow-councillors—the energetic and experienced Glasgow merchants saw to that. In the autumn of 1699 the second Darien fleet sailed from the Clyde.

VI

Of the Scottish efforts to establish their settlement on the Isthmus a pathetic memorial is furnished by the names that have clung to the promontory at the extremity of which they built their fort—Punta Escocès—and the cove in which their ships lay at anchor—Puerto Escocès : of this harbour and this promontory a clear idea is provided by the photographs.[11] The moat referred to in the photograph formed part of the landward defence of Fort St. Andrew. Its position is clearly indicated in the chart of Caledonia Bay preserved among the Leven Papers in the National Library of Scotland. On the contoured map of the Isthmus [12] based on the survey made by the

United States Canal Commission, the name Caledonia Bay is rather wider in its application than was the case in the older maps. On the American map the river which in Wafer's map bore the legend "The Author's Entrance to the South Seas" is now entitled Rio Caledonia : an appropriate designation, for it was up this river valley and through the pass now called Caledonia Gap that Captain Campbell of Fonab led his men to the attack on the Spanish camp at Toubacanti.

While the name Paterson's Hill recalls one tragedy, the name Cullen Island recalls another—the death in the jungles of Darien of eleven seamen of the United States Navy in 1854 while engaged in testing the feasibility of the suggestion for a canal from sea to sea put forward by Dr. Edward Cullen ; for the Caribbean terminus of the proposed canal Dr. Cullen advocated strongly the claims of Caledonia Bay.[13]

Somewhere in the neighbourhood of Caledonia Bay stood the old Spanish settlement of Acla, the point from which Vasco Nuñez de Balboa began his march to the peak from which he beheld the South Sea ; the base from which he carried across the hills the materials for the construction of the ships he was to launch on the newly discovered waters ; the scene of his death at the instigation of Pedrarias.[14] Truly a coast of tragic memories.

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[5] *Ibid.*, pp. 64-66.

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[9] Manuscripts of the House of Lords—1695-1697. Vol. 11 (N.S.), p. 464.

[10] Wodrow, Robert. "Analecta." III. *Publications of the Maitland Club*, 1843, p. 313.

[11] The photographs which suggested and illustrate this article were kindly presented to the R.S.G.S. by Mr Tucker McClure, of Balboa and Los Angeles.

[12] Darien Routes, Caledonia Bay to Rio Sabana. 1:60,000. Isthmian Canal Commission, 1899-1900. Photostatic excerpt by courtesy of the American Geographical Society.

[13] Mack, Gerstle. "The Land Divided." Pp. 249-259. New York, 1944.

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Markham, Sir Clements R. "Vasco Nuñez de Balboa, 1513-1913." *Geographical Journal*, 1913, 41: 517-532.

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EUROPE

ALUMINIUM INDUSTRY OF EUROPE. By J. E. Collier. *Economic Geography*, 1946, 22 (*2*) : 75-108. 13 figs.

THE NORTHWARD MARCH OF PALAEOLITHIC MAN IN BRITAIN : An introduction to a study of the evidences of earliest human settlement in Scotland. By A. D. Lacaille, F.S.A. *Proceedings of the Geologists' Association*, 1946, 57 (*2*) : 57-81. 5 figs. 59 references.

BRITISH PREHISTORIC ARCHAEOLOGY : RECENT AIMS, METHODS AND RESULTS. By C. F. C. Hawkes. *Nature*, 1946, 157 (*3996*) : 717-720.

ECONOMIC AND SOCIAL PLANNING IN THE UNITED KINGDOM. The complex story of the development of planning, from the depression in the early thirties to the present day, is elucidated in a paper by Professor G. H. J. Daysh (*Tijdschrift voor economische Geographie*, 1946, 37 (*9*) : 9 pp.). The Special Areas (1939) and Development Areas (1946) are shown on a map, and the geographical approach to planning problems is stressed.

THE GREAT GLEN FAULT. The dislocation extending for a distance of about 130 miles from Tarbat Ness to Mull along the Great Glen of Scotland has been regarded as a normal fault with a downthrow to the south-east. Evidence has accumulated which tends to show that the dislocation is actually a lateral-slip fault with a horizontal displacement of about 65 miles, the *main* lateral displacement having taken place in Upper Old Red Sandstone or Lower Carboniferous times. The evidence and its implications are discussed in detail by Dr. W. Q. Kennedy in *The Quarterly Journal of the Geological Society of London* (1946, 102 (*1*) : 41-72. Plate. 8 figs. Bibliography. Discussion : pp. 72-76).

DURHAM CITY. The site, history, and functions of Durham City are described in an article in *The Sociological Review* (1944, 36 (*1-4*) : 67-75. 2 plans), by D. Sylvester.

A DETAILED PROFILE OF THE RIVER TEST. By K. C. Boswell. Interpretation by J. F. N. Green. *Proceedings of the Geologists' Association*, 1946, 57 (*2*) : 102-116. 3 figs.

BIRMINGHAM AND THE BLACK COUNTRY. By H. Rees. *Economic Geography*, 1946, 22 (*2*) : 133-141. 4 figs.

THE INDUSTRIES OF BRISTOL. By F. Walker. *Economic Geography*, 1946, 22 (*3*) : 174-192. 17 figs.

THE ROYAL GREENWICH OBSERVATORY. By Sir Harold Spencer Jones, F.R.S. *Nature*, 1946, 158 (*4003*) : 80-81. Photograph of Herstmonceux Castle.

COASTAL PRESERVATION AND PLANNING. The survey of the coast of England and Wales [*S.G.M.*, 1945, 61 (*1*) : 23] has now been completed by the survey of the coast from Lulworth to Gravesend, of the Isle of Wight and the Isles of Scilly. The results are discussed by J. A. Steers (*Geographical Journal*, 1946, 107 (*1-2*) : 57-60. 4 photographs. 2 maps). The author again stresses the need for immediate and vigorous action to preserve areas of unspoiled natural beauty, and points out the evils of a lack of planning. The evaluation of coastal scenery between Lyme Regis and Clacton-on-Sea is represented on a map (1 : 500,000). There is also a map of the Isles of Scilly, showing cliffs, sand dunes, residential areas, and areas of bad scattered development.

ANTHROPOLOGY ON THE CONTINENT OF EUROPE IN WAR-TIME. By W. B. Fagg. *Nature*, 1946, 158 (*4001*) : 14-16.

THE BALTIC CULTURAL AREA. By Prof. G. Räng. *Baltic Review*, 1946, 1 (*4-5*) : 161-174. Sketch-maps showing the eastern Baltic cultural region A.D. 400, Viking routes, and the distribution of language groups in Baltoscandia.

NORWEGIAN FISHERIES. Fluctuations in the fishing industry are reviewed by G. Rollefsen, and distribution and statistics by T. Sund, in *Norsk Geografisk Tidsskrift* (1944, 10 (*4*) : 121-156. 16 figs.). The paper is accompanied by a bathymetric map showing location and range of visibility of 56 lighthouses, and a map showing the seasonal distribution of different fishes and lobsters in Norwegian coastal waters.

RELIEF AND RIVERS OF LUXEMBOURG. The principles of the relations between topography and erosion by streams are discussed, with special reference to Luxembourg, by A. Allix (*Les Études Rhodaniennes*, 1944, 19 (*3-4*) : 180-198. 2 figs.). The theories and terminology employed by other workers are critically examined, and the importance of correlating erosion studies with hydrodynamics is pointed out.

GEOGRAPHY AND GEOGRAPHICAL STUDIES IN FRANCE DURING THE WAR AND THE OCCUPATION. By Professor A. Perpeillou. *Geographical Journal*, 1946, 107 (*1-2*) : 50-57.

GEOGRAPHICAL DEVELOPMENT OF PARIS. The growth, decay, and regeneration of the *quartiers* of central Paris during the past four centuries are described by P. Bonnoure in *Les Études Rhodaniennes* (1944, 19 (*1-2*) : 21-42. 4 figs.). The author discusses the geographical and human factors involved, including the control of utilitarianism by aestheticism in planning, and the course of the ' centre of gravity ' of Paris from the Cité to the Pont Neuf and thence, definitely on the right bank of the Seine, to the Palais Royal and the Boulevards, and to the Champs-Elysées.

THE BRIDGES OF THE RHÔNE : A STUDY IN HUMAN GEOGRAPHY. By A. Chatelain. *Les Études Rhodaniennes*, 1944, 19 (*3-4*) : 109-139. 5 figs. Bibliography.

WATERWAYS OF SWITZERLAND. In " Les débouchés maritimes et fluviaux de la Suisse " (*Études Rhodaniennes*, 1945, 20 (*1-2*) : 59-69) A. Desaunais reviews the development and planning of waterways connecting Switzerland and the sea : Rotterdam-Bâle-Constance, Marseilles-Geneva-Bâle, and Venice-Milan-Locarno. A German project to link Lake Constance with the Danube was somewhat utopian, but the Swiss plans, interrupted by the war, are again being actively pursued. Docking facilities at Bâle (5111 vessels arrived during January-August, 1938) are being extended.

MORPHOGENESIS OF THE SONNBLICK MOUNTAINS. By H. Klimpt. *Geographischer Jahresbericht aus Österreich*, 1943, *21-22* : 1-130. 8 photographs. Profiles. Bibliography (142 references).

THE EAST PRUSSIAN LANDSCAPE. By R. Lebeau. *Études Rhodaniennes*, 1945, 20 (*1-2*) : 35-57. 4 figs.

CHRONICLE OF THE [RUSSIAN] GEOGRAPHICAL SOCIETY, 1845-1945. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1946, 78 (*1*) : 25-90.

HISTORY OF THE GEOGRAPHICAL STUDY OF THE KARELIAN ISTHMUS. By R. L. Zolotnitskaya. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1945, 77 (*6*) : 369-379. 78 references.

TRACES OF GLACIATION IN THE SOUTHERN URALS. By A. A. Kolokolov and K. A. Lvov. *Isvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1945, 77 (*1-2*) : 88-107. 5 figs.

ASIA

TRANSJORDAN. By M. Mackenzie. *Journal of the Royal Central Asian Society*, 1946, 33 (*3-4*) : 260-266. Discussion : 266-270.

THE QASHQAI TRIBE OF FARS. The history, customs, and organisation of the Turkish tribe of Qashqai in western Persia are described by Dr. O. Garrod in the *Journal of the Royal Central Asian Society* (1946, 33 (*3-4*) : 293-306. Sketch-map). It is the author's opinion " that the Qashqai approach the highest level of nomadic civilization."

IMPRESSIONS OF THE SOVIET MIDDLE EAST. By J. Parker, M.P. *Journal of the Royal Central Asian Society*, 1946, 33 (*3-4*) : 341-356.

ON THE PROBLEM OF THE EASTERN BOUNDARY OF THE CASPIAN SEA BASIN. By M. I. Alexandrova. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1945, 77 (*1-2*): 119-121. Sketch-map.

IRRIGATION IN THE NETHERLANDS INDIES. By W. A. van der Meulen. *The Netherlands Indies*, 1940, 3 (*3-4*) : 142-159. 7 photographs. 1 graph.

SOME NOTES ON THE CENTRAL BATAK COUNTRY. By G. L. Tichelman. *The Netherlands Indies*, 1940, 3 (*3-4*) : 189-198. 4 photographs.

NOTES ON A REGIONAL SURVEY OF THE HALI-ELA AREA. By C. H. L. Sirimanne. *Bulletin of the Ceylon Geographical Society*, 1946, 1 (*4*) : 29-33. Sketch-map and transect chart.

THE KASHMIR SAPPHIRE MINES. By R. V. Gaines. *Himalayan Journal*, 1946, 13 : 73-77.

1939 KARAKORAM EXPEDITION. By P. Mott. *Himalayan Journal*, 1946, 13 : 9-27. 17 photographs. Sketch-map. [Cf. *S.G.M.*, 1941, 57 (*2*) : 92.]

THE AFDIGAR PASS IN HUNZA. By R. C. F. Schomberg. *Himalayan Journal*, 1946, 13 : 78-86. 3 photographs. Map.

RUSSIA IN ASIA. By Lt.-Col. J. V. Davidson-Houston. *Journal of the Royal Central Asian Society*, 1946, 33 (*3-4*) : 357-368. Discussion : 368-371.

ON ANCIENT SETTLEMENTS OF THE YENISEI SAMOYEDS OR ENETEN. By L. S. Berg. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1945, 77 (*5*) : 257-260.

HISTORY OF THE FORMATION OF THE KARA TAU MOUNTAINS AND THE TAU-SAGYZ AREA. By V. V. Galitskii. *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1945, 77 (*4*) : 227-244. 4 figs. 56 references.

THE DZHUGDZHUR RIDGE, with elevations exceeding 3000 metres, is the most easterly and the highest of five more or less parallel ranges with a N.-S. trend between 135° E. and approximately 100 miles N.W. of Okhotsk. Relief, glaciation, and geology are described by V. I. Tychinskii in *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva* (1945, 77 (*5*) : 261-270. 4 figs. 12 references).

AMERICA

THE FIRST RUSSIAN INFORMATION ABOUT AMERICA. A brief summary of early Russian Americana is given by L. S. Berg in *Izvestiya Vsesoyuznogo Geographicheskogo Obshchestva*, 1945, 77 (*3*) : 172-174.

CENSUS OF THE AMERICAS, 1950. Difficulty in the comparison of census data of the various American nations will be overcome by standardisation of methods used by each of the 21 American republics and Canada in the hemispheral census to be undertaken in 1950. According to a note in the *Bulletin of the Pan American Union* (1946, 80 (*7*) : 413-414), the census will include agriculture as well as population. A study of geographical problems involved, with special reference to the preparation of maps, will be undertaken by Prof. Jorge Zarur, under the direction of the Inter-American Statistical Institute which is sponsoring the scheme, with the co-operation of the national bureaux of statistics of the twenty-two nations.

FUTURE POPULATION OF CANADA : A STUDY IN TECHNIQUE. By Griffith Taylor. *Economic Geography*, 1946, 22 (*1*) : 67-74. Fig. 1. Isoiketes of Canadian population for 1941, based upon densities per square mile. Fig. 2. Dominant environmental controls (major structural and geological regions, average annual precipitation, July temperatures, major vegetation types, habitability).

TRANS-CANADA AIR LINES. By R. H. Ayre. *Canadian Geographical Journal*, 1946, 33 (*1*) : 2-18. 42 photographs. Map.

LANDFORMS OF THE NORTHWESTERN STATES. The detailed "Landform Map of the Northwestern States" (1 : 1,400,000) published by E. Raisz in 1941 is presented in his paper on "The Olympic-Wallowa Lineament" in the *American Journal of Science*, 1945, 243-A : 479-485. On completion of the map, when looking at the map from the north-western corner to the centre, the author noticed a major structural line or lineament between Cape Flattery to the Wallowa Mountains. Minor fault scarps in the Oregon desert show a similar trend. The map also suggests that "there is no distinct topographic break between the Northern Rocky Mts. and the Blue Mts."

THE GULF OF CALIFORNIA. In his "Contribucion al conocimento del Mar de Cortés" (*Boletin de la Sociedad Mexicana de Geografía y Estadística*, 1946, 62 (*1*) : 89-130), B. F. Osorio Tafall describes the physiography, climate, origin, bathymetry, sediments, hydrography, productivity, and ecology of the Gulf of California. The paper is illustrated with photographs of parts of the coast and islands, a sketch-map of the natural regions surrounding the Gulf, and a bathymetric chart.

EL PARICUTÍN. In the summer of 1945 W. C. Lowdermilk and R. W. Bailey collaborated with Mexican investigators in studying the hydrology and erosional phenomena in the area surrounding the volcano, which was born in February, 1943, and attained a height of 1500 feet in ten months. [Cf. *S.G.M.*, 60 (*1*) : 25, and (*2*) : 57.] The spectacular erosion occurring in the covering of volcanic ash, and its effects upon agriculture in the surrounding country are described in an article in *Soil Conservation* (June-July, 1946), reprinted in the *Bulletin of the Pan American Union* (1946, 80 (*8*) : 442-450. 7 photographs).

EL SALVADOR. By M. E. Lemaire. *Economic Geography*, 1946, 22 (*3*) : 193-202. 7 figs.

MANAGUA. The site of the present capital of Nicaragua was inhabited at the end of the Pleistocene period, and at the time of the Spanish conquest Managua was a thriving city with some 40,000 Chorotega or Toltec inhabitants. About three years later, in 1527, the town was devastated and abandoned, and as late as 1751 had a population of only 4410 (now 120,000). The title of city was conferred on Managua in 1846, and its development to the present day is described by L. Cuadra Cea in *Bulletin of the Pan American Union* (1946, 80 (*9*) : 490-498. 11 photographs). Managua has opportunities for expanding to the southward plateau, crossed by the Pan American Highway.

CARTOGRAPHY

MAP PROJECTIONS AND THE GLOBAL WAR. By E. Raisz. *The Teaching Scientist*, 1946, 2 (*2*) : 33-39. 5 figs.

ITALY'S PART IN SCANDINAVIAN CARTOGRAPHY. By L. Bagrow. *Ymer*, 1946, 66 (*3*) : 188-203.

TOPOGRAPHIC WORKS OF NORWAY ISSUED IN GREAT BRITAIN DURING THE WAR. By K. Gleditsch. *Norsk Geografisk Tidsskrift*, 1946, 11 (*1*) : 1-24 (English summary, pp. 24-26). 6 maps.

GLACIAL MAP OF NORTH AMERICA. A map representing the Pleistocene glacial features of North America has been compiled and edited by a committee of American and Canadian geologists, and published as Part 1 of *Special Papers Series*, No. 60, with Part 2 as a pamphlet (40 pp.) containing explanatory notes and a bibliography (New York 27 : Geological Society of America. $2.00). The map (72 miles to one inch) measures 79×52 inches and is issued in two sheets which contain a number of insets, including the distribution of loess. Areas glaciated during each of the ice ages are differentiated in colour, and end moraines and other glacial features are shown. Major topographic features are shown by form lines, and the map as a whole provides a continental view instead of focussing attention on the southern part of the glaciated region, the area represented extending from the North Pole to Los Angeles, and from Bering Strait to Iceland. (R. F. Flint, in *Science*, 1946, 103 (*2681*) : 627.)

MAP OF HISPANIC AMERICA. *Nature*, 1946, 157 (*4000*) : 870. Cf. *S.G.M.*, 62 (*2*) : 84.

THE PACIFIC OCEAN AND ITS MAPS. In *Pacific Affairs* (1946, 19 (*3*) : 294-302) J. C. Beaglehole reviews at length an account of "The Early Cartography of the Pacific" by L. C. Wroth (*Papers of the Bibliographical Society of America*, 1944, 38 (*2*) : 87-268). Mr. Wroth is Librarian of the John Carter Brown Library, where in 1943 many of the older maps of the Pacific were exhibited, including a copy of the Arrowsmith map of 1798 with additions supplied by captains of ships of a mercantile firm in Providence. In this copy "we see the process by which cartography develops through the practical necessities of merchants and mariners intent upon the ordinary business of life."

REVIEWS OF BOOKS

EUROPE

British Weather. By Stephen Bone. 9×6½ inches. Pp. 48. 8 plates in colour. 29 illustrations in black and white. Britain in Pictures. London : William Collins, Sons and Co. Ltd., 1946. *Price* 4*s.* 6*d.*

Warning the reader that he intends to deal, not with the causes, but with the effects of weather, Mr. Bone proceeds to give a delightfully informal summary of British climate ; discusses wittily and always interestingly its effect on our character, habits and landscape ; and argues most cogently that "it can hardly be matched anywhere in the world." Though the meteorologist may take exception to some of the author's generalisations, to the faulty optics of certain artists, and to the wrongly named clouds on p. 19 (an exact reproduction of an engraving of 1802 from the book in which Luke Howard gave to the world the first cloud classification, later the basis of a considerably modified classification, embodied in the International Cloud Atlas), he would surely concede that the reader is not likely to be seriously misled.

The illustrations, ranging from Constable and Du Maurier (of *Punch*) to Paul Nash and the author himself, are well reproduced, with the single exception of a Turner, characteristically flamboyant, which recalls *Punch's* "imaginary title for a new Turner 'a typhoon bursting in a simoom over the whirlpool of Maelstrom, Norway ; with a ship on fire, an eclipse and the effect of a lunar rainbow'."

The Scot, especially if he lives near the east coast, will be surprised, though perhaps not unduly perturbed, that the word *haar* does not appear in a book on British weather, but he certainly will be disappointed to find that Mr. Bone does not include among the 37 illustrations one typical Scottish land- or sea-scape. Of course, the optical effects of sun, cloud and rain are not materially different whether observed at Langdale, Llanberis or Lochnagar, but who among us, at the time of witnessing say the shimmering Spey or Dee valley from a Cairngorm height in high summer, or a rain flurried sunset behind Rum and Eigg from Morar or Arisaig, is prepared to believe for a moment that each is not superbly unique ? But Mr. Bone atones by being already the author of a Guide to the West Coast of Scotland, which will be eagerly sought, if not already possessed, by readers of the present wholly charming little book.

J. P.

The Population of Great Britain: Current Trends and Future Problems. By MARK ABRAMS. 9×6 inches. Pp. 51. Diagram. London: George Allen and Unwin Ltd., for The London Press Exchange Ltd., 1945. *Price* 3*s.* 6*d.*

This small book is the first of a series of volumes to be issued by the Research Department of the London Press Exchange Ltd. as a contribution to the factual background of post-war problems affecting British industry and commerce and the distribution of British products. The author deals with the great changes that have taken place in the population of Britain since the mid-nineteenth century as regards replacement rate and age composition and the effects these will have on future population. He contrasts the mid and late nineteenth century, with its high reproduction rate, its great emigration and the large proportion who were children, with the nineteen thirties and forties, with reproduction rates not high enough to replace the present population, their smaller number of children and increasing proportion of old people.

The effect of present trends, and the likely effects of their continuance on future economic and social life, are outlined and the possible causes of the decrease in births analysed. Mr. Abrams concludes that the reasons are economic and social, and discusses various types of 'remedy.' He assumes throughout that the decline in population is a bad thing. Since the book appeared, family allowances have begun in Britain, but he did not consider the scales proposed in 1945 and now approximately adopted were large enough to have any appreciable effect on the size of families.

The book is quite readable by anyone not frightened or bored by many figures and tables of statistics. In places the author assumes that trends observable in England and Wales hold true of Britain as a whole. Some acquaintance with the census suggests that this is not justified; for example, the natural increase in Scotland between 1921 and 1931 was considerably higher than that in England and Wales, a fact often ignored by writers and public speakers, and completely masked in its effects by the huge emigration during that decade. C. P. S.

Scotland's Record. Edited by W. M. BALLANTINE. 8½×5½ inches. Pp. 184. 30 photographs. Edinburgh: The Albyn Press, 1946. *Price* 12*s.* 6*d.*

This book is a record of Scottish life and work during the six years of war, from 1939 to 1945. It is divided into five sections, and contains articles by 37 contributors, each an expert on his subject. The visitor to Scotland and the Scot abroad will find in its well-printed pages an excellent guide to much of post-war Scotland, and for the Scot who has lived through the war years at home there is also valuable information which may well be news to him. The subjects discussed range from the Scottish people to their environment and activities. Education, farming, Scottish glass, movements in Scottish art and music, and much else, are briefly and succinctly discussed. The editor is to be congratulated on bringing together in 184 pages so much expert information. Perhaps a section on the Scot's very distinct type of humour, and another on his favourite pastimes (there is no mention, for example, of golf, curling, or even 'the dogs' which fill so much of his leisure hours to-day), might have added some pleasant light relief and shown another facet of the Scotland of to-day. I. W. H.

Scotland Arise! By DUNCAN FERGUSON. Crown 8vo. Pp. 82. Glasgow: Scottish Secretariat Ltd., 1945. *Price* 3*s.* 6*d.*

The title of this booklet suggests a call to action based on visualisation of national welfare rather than a diagnosis of a malady of which the patient may already be aware. There has been apathy, ignorance, and a 'divisiveness' responsible for many ills which are absent, or far less acute, elsewhere—in the Scandinavian democracies, for instance. However, ways to a healthier state of affairs, whether in education, the press, local government, industry, or in other fields, are surveyed by the author. One suspects he is wearing dark spectacles when he states: "If the Royal Scottish Geographical Society wants to fill the Usher Hall it has only to secure a speaker on China, Chile or Cotopaxi; the surest way to empty it would be to announce discussion of a Scottish topic." J. H. K.

Old London Illustrated: London in the XVIth Century. Drawings by H. W. BREWER. Descriptive articles by HERBERT A. COX. 9½×6½ inches. Pp. viii+53. 26 illustrations. London: The Builder Ltd., 8th edition, n.d. *Price* 10*s.* 6*d.*

This beautiful little book is to be commended to anyone interested in the history of London, whether he be antiquarian, tourist, or ordinary citizen. It consists of ten chapters written round the illustrations, and these are mainly the work of H. W. Brewer (who died in 1903), along with some of the ancient drawings and picture-maps from which he derived his inspiration.

The contribution of Roman and Norman to the growth of the city is not neglected, but, as the title would suggest, the author is chiefly occupied with London as it was before the dissolution of the monasteries and the destruction wrought by the Great Fire of 1666. He

discusses the origin of quaint old names and many problems connected with the line of the city wall. He shows what has been lost through the latest attacks by the enemy. And, although he would have us consider all losses suffered from the point of view of the opportunities afforded for wiser reconstruction, he insists that his prime purpose is not replanning but research. R. T. C.

Gower Caves. Survey by E. E. Allen and J. G. Rutter. 8½×5½ inches. Pp. 28. 11 figs. 28 photographs. Swansea : Vaughan Thomas, 1946. *Price* 5*s.*

This booklet is a report from *Proceedings of the Swansea Scientific and Field Naturalists' Society*, 1944, and contains an account, illustrated by photographs and sketch-maps, of some fifteen caverns in the Gower peninsula examined by the authors since 1943. The inclusion, where possible, of a list of Pleistocene mammals found at each site adds to the value of this interesting survey. The authors are continuing their investigations, and a second part of the paper is to be published in the *Proceedings* in 1947. The incorporation of the results in an enlarged edition of the booklet will be welcome. J. H. K.

The Scheldt Question to 1839. By S. T. Bindoff. Foreword by Professor G. J. Renier. Demy 8vo. Pp. ix+238. 3 sketch-maps. London : George Allen and Unwin Ltd., 1945. *Price* 10*s.* 6*d.*

The position of Antwerp, connected directly to the sea yet cut off from it by a political frontier, creates the 'Scheldt Question'; the importance of Antwerp as one of Europe's great seaports makes the 'Scheldt Question' an international problem.

By his research into contemporary documents Mr. Bindoff has made a valuable and authoritative contribution to the literature of the subject. Although he has concentrated primarily on the history of the half-century ending with the settlement of 1839, his exploration takes him back, not merely to 1572 when the frontier was first established, a date which most historians regard as the beginning of the 'Scheldt Question,' but to the earlier centuries when reclamation was proceeding to be followed by the great inundations of the fourteenth and fifteenth centuries when the main pattern of the modern Scheldt was drawn. It is in these earlier centuries that the problem has its roots. The detailed study of the settlement of 1839 is enriched by the clear background thus built up, for it clarifies the motives and the impulses behind the intricate negotiations following the elimination of Napoleon from the European scene. S. C. F.

Poland : The Struggle for Power, 1772-1939. By Henryk Frankel. 8½×5½ inches. Pp. 192. 5 sketch-maps. London : Lindsay Drummond Ltd., 1946. *Price* 12*s.* 6*d.*

"The main conclusion of this book is that the economic, social and political oppression of the great majority of the population was largely responsible for Poland's backwardness in all spheres and her helplessness in face of foreign aggression both in 1772-95 and in 1939." The author insists on the distinction between people and government and points out that, from the time of the first Partitions, the rulers of the country have frequently been Poles who had co-operated or were co-operating with the occupying powers—Prussia, Austria, Russia—and were naturally inclined to continue the offensive and imperialist policies of those states.

The principal factor in Poland's history is the serf and peasant problem, so often ignored. Serfdom in Poland lasted well into the nineteenth century, and this probably accounts in great measure for the persistence of the master-and-slave attitude of mind, for the brutal methods employed in dealing with opponents of their own race and with national minorities (see pp. 96, 144, 153 *et seq.*), and for the selfish megalomania that marked the conduct of domestic and foreign affairs at all times during the modern period and not least in the years between the two great wars. Even after the Restoration, when the only sensible policy for Poland's rulers would have been to do their utmost to live peaceably with their neighbours and to remedy injustice at home, they lost no time in putting into practice the very abuses from which their country had suffered in the past, a deplorable fact that drove Lloyd George and many less eminent defenders of small nations to despair.

The book is supplied with maps and an index and is well documented : there are references in footnotes to the bibliographies given with each chapter. R. T. C.

ASIA

East is West. By Freya Stark. 8×5¼ inches. Pp. xxii+218. 84 photographs. Sketch-map. London : John Murray, 1945. *Price* 12*s.* 6*d.*

Freya Stark takes her readers on an enthralling tour of the Middle East (Aden, San'a, Egypt, Palestine, Syria, Transjordan, and 'Iraq) during the crucial years of the recent war. Her story is full of interest and incident and is illustrated by unusual and attractive pictures. She was present at the bombing of Aden by the Italians, in Egypt during the dark days of threatened invasion, and at the siege of the Baghdad Embassy by the 'Iraqi rebels. She

meets and exchanges ideas with all sorts and conditions of men and women, British and Arab (including the ex-Mufti of Jerusalem), from Rulers and Governors to the poorest among the 'Brothers of Freedom.'

A striking feature of her book is the light that it throws on how outlook and conditions are changing ever more swiftly in the Middle East under the impact of the ideas of freedom, education, publicity and so on, and, materially, of the internal combustion engine—all intensified by the changes and chances of war. There is much, in particular, of the genesis and activities of the 'Brothers of Freedom,' a movement to foster the growth of democratic ideas.

Freya Stark relates that the Palestine question crops up incessantly in conversations and, while appreciating the views of both sides, finds it difficult to accept that it could be right for great nations to force unwished for immigration upon a small people. She puts in a good word for the often abused colonial official who "has come to see good in a civilization not his own." Of the Veil she writes: "There is no doubt that women boxed up in houses are *much* more powerful than those of us who roam about outside." This coincides with the reviewer's experience (and as an emancipated young lady once said, with a broad smile, to his wife: "If one wants to play the fool, it is much easier to do so from behind a veil").

East is West will interest both those who know the Middle East and those who wish "an armchair journey," as the author modestly describes the book. Edinburgh may be interested to read that Freya Stark took a small cinema to the Yemen, where "the Ladies were entranced by 'Ordinary Life in Edinburgh'."

But so much water is flowing so fast under the Middle Eastern bridges that one only wishes that the story could be carried up to date. G. D. B.

Iran. By WILLIAM S. HAAS. 9×6 inches. Pp. xi+273. 11 illustrations. Map. New York: Columbia University Press. London: Geoffrey Cumberlege, Oxford University Press, 1946. *Price* 23*s.* 6*d.*

The author was adviser to the Ministry of Education in Tehran, but his friendship and sympathy for the Persian people have not obscured his critical faculty, and whilst he reviews concisely and clearly the various aspects of history, geography, religion and philosophy which have made the Persian people what they are to-day, perhaps the main feature of the book is the way in wihch he reviews the work of the late Reza Shah and assesses both the major benefits and the drawbacks to the country accruing from his regime.

One drawback, however, that is insufficiently mentioned is the mishandling of the settlement of the nomadic tribes. That it was necessary for the tribal population to be subjected to central authority there is no doubt. On the other hand, it suffered quite unnecessarily and very severely from arbitrary and ill-considered settlement, and was in a state of rapid degeneration when the abdication of Reza Shah made it possible for the tribes to break their bonds and largely to resume their old nomadic ways. Any fresh attempt at settlement should be made in the light of the experience gained from this failure of the first, for the continuance of the tribes-people as a peaceful but vigorous element of the population can be said to be necessary for the future well-being of the Persian people as a whole.

As a citizen of the U.S.A. writing for the information of the American people, the author has dealt with praiseworthy impartiality as to the relationship between Persia and Russia and Britain. His book was, however, completed in September 1945 before the developments of the deliberate breach of the 1942 Treaty by Russia, and the final fostering by her of autonomy in Azerbaijan.

The full outcome of these events has still to be seen, and if the book is re-published it is to be hoped that the author will add a supplementary chapter giving his attitude towards them as affecting Persia's outlook for the future. W. BR.

Britain and Ceylon. By LENNOX A. MILLS, D.Phil.(Oxon.). Crown 8vo. Pp. 72. 19 photographs. 2 maps. Longmans' Pamphlets on the British Commonwealth, No. 3. London: Longmans, Green and Co. Ltd., 1945. *Price* 1*s.*

This new pamphlet of the British Commonwealth series is historical rather than geographical in its scope, although the agricultural aspect of Ceylon is by no means neglected. The colony's political history since British annexation is very well covered.

C. R. V. G.

AFRICA

História de Santa Cruz do Cabo de Gué (Agadir), 1505-1541. By JOAQUIM FIGANIER. $8\frac{3}{4}\times6\frac{1}{4}$ inches. Pp. 403. 13 illustrations. 2 sketch-maps. Lisbon: Agência Geral das Colónias, 1945.

The publications of the Colonial Agency in Lisbon received by the Society are always notable for the quality of the paper and print; this volume is no exception. It is illustrated

with maps and photographs, and is equipped with elaborate notes, an appendix giving long extracts from contemporary chronicles, a synchronised table of dates, and an index of proper names.

The text is compiled from Portuguese, French and Arab sources and gives a detailed account of a little-known episode in Portuguese history : the establishment, the brief prosperity, and the fall of the fortress and town of Santa Cruz (Agadir) during the years 1505-1541, in the reigns of Manuel I and John III, the period of Portugal's greatest renown as a nation of seamen and explorers. The book is a remarkable monument to that piece of colonial enterprise ; the only trace of the Portuguese settlement left to-day is the poor fishing village of Funti. R. T. C.

Ethiopia, Eritrea and Somaliland. By NORMAN BENTWICH. Demy 8vo. Pp. 24. End-paper map. London : Victor Gollancz Ltd., 1945. *Price* 1*s.* 6*d.*

An instructive record of the history and present-day conditions in the countries under review. In view of their territorial claims at the Peace Conference of the United Nations, the geographical aspect is of particular interest. The author suggests a reasonable principle of settlement of the territories in Africa which were occupied by Italy before the war : he favours restoring Eritrea to Ethiopia, giving Ethiopia not only access to the coast but also use of the through communications so laboriously built by the Italians. He also favours uniting the Somali people and their territories in order to secure a unified administration. (The latter is meanwhile opposed by Ethiopia in preliminary peace talks.)

We may not all agree that the stormy history of Ethiopia has at last produced a dependable people of pious ideals of future good behaviour, but the author seems to render a good constructive plan for the adjustment of a settlement. Our part, along with South Africa, in aiding Ethiopia to her present sovereignty is unquestionable. We look to the Abyssinians to acknowledge their freedom gratefully, and be of mind to be guided to a dispassionate and reasonable settlement of their future boundaries. They have no justification for any claim for extreme benefits. This is a point which the author has not stressed.

The booklet is enlightening and informative. The problem of territorial adjustment is of special concern to Britain, for the defence of the southern area of the Red Sea is involved and future lines of communications on the east coast of Africa and the Indian Ocean. A. B.

A Short History of Eritrea. By STEPHEN H. LONGRIGG. Crown 8vo. Pp. viii+188. 6 photographs. 4 sketch-maps. Oxford : Clarendon Press, 1945. *Price* 10*s.* 6*d.*

This book is a carefully compiled historical account of Eritrea. During the forthcoming discussions on the readjustment of African territories, the disposal of Eritrea is likely to play a prominent part and be a considerable 'bone of contention.' This summary of the economical and political position of Eritrea, by an experienced administrator of the country, is a valuable contribution toward making the character of the territory more widely known. Though small, Eritrea is important from a strategic point of view. In all other respects it is a poor, infertile region of little promise for modern development. The author says, rightly, " Eritrea will never become rich or great."

In geographical features and people, much of the country is closely related to Ethiopia. Its value is in containing an important stretch of coast on the Red Sea, with important harbours. Land-locked Ethiopia, to the south, looks longingly toward this line of entry from the outside world. At the moment she assumes the rôle of the masterful adult with this baby country under her left arm as she looks toward Mecca. She covets absolute possession, imbued with grand ambitions to enlarge her new-found importance in the world. She will claim the whole of Eritrea as a right. This book sees need for care in arriving at a final decision. That is wise advice. It will not be easy to arrive at a solution fraught with dependable security. When decisions are taken over the council table, they are likely to prove largely an experience of trial and error. A. B.

Ethiopia under Hailé Selassié. By CHRISTINE SANDFORD. Demy 8vo. Pp. viii+149. 16 photographs. Map. London : J. M. Dent and Sons Ltd., 1946. *Price* 10*s.* 6*d.*

Coming from a European who has been resident in Ethiopia for almost twenty years, this book will be opened with keen anticipation of reading and learning something worth while of this warlike and romantic country which, even to-day, is no more than at the dawn of life in modern progress. The descriptions of the country, the climate, the people, the village life, and the agriculture are detailed and accurate. It is an informative book on the new administration as well.

In natural conditions and resources Ethiopia is near to being the most richly endowed country in all Africa. It is a gem, as African countries go, raised high above the burning deserts which surround it—a country of remarkably pleasant climate, abundant rain, and areas of rich soil which yield good crops of grain, the finest of hay, and sleek cattle.

Everyone who knows the country hopes to see it realise the settled and prospering future of which it is worthy. Its progress seems to rest upon the soundness of its internal recon-

struction. Ethiopia has had a turbulent political past. Feudalism and tribal jealousies are still in evidence, political scheming rife. It remains to be seen whether or no the Emperor and his advisers will lead the people to find the solid substance in themselves so necessary to achieve a lasting place of honour and respect in the world. A beginning has been made. In Mrs. Sandford's view there are grounds laid for good progress in the immediate future. Great Britain has been a helpful friend in war and financially, and no one wishes Ethiopia well with greater sincerity. A. B.

Bibliografia Geral de Moçambique. By MÁRIO COSTA. 9×6¼ inches. Pp. 359. Lisbon : Agência Geral das Colónias, 1946.

Although, as admitted by the compiler, this bibliography is incomplete, it provides an impressive list of references to publications relating to Moçambique, mainly of the present century. The items are classified under thirty-four headings, such as geography, geology, anthropology, agriculture, commerce, communications, administration, education, missions, periodical publications, monographs, statistics, and so forth. The last eighty pages of the volume are devoted to author, subject, and general indices. Although source references are given in the case of official and of certain geographical publications, the absence of particulars save title, author, and year of publication detracts from the utility of an otherwise valuable book of reference. J. H. K.

AMERICA

The Discovery of Canada. By LAWRENCE J. BURPEE. 8×5½ inches. Pp. x+280. End-paper maps. Toronto : The Macmillan Company of Canada Ltd., 1944. *Price* $3.00 or 12*s.* 6*d.*

Truth is stranger than fiction, and so the adventures of Sherlock Holmes are more familiar to the general public than those of Pierre Esprit Radisson who voyaged into "the Great and filthy Lake of the Hurrons," or of Alexander Henry who "saw a crowd of Indians within the fort furiously cutting down and scalping every Englishman they found." The records of the explorers and their companions who contributed to our knowledge of the geography of Canada are more thrilling than fiction, and we are indebted to the author for presenting in one volume the story of their work. Where serviceable, the explorer tells his own story, and elsewhere the exploits of the discoverers are ably and attractively narrated.

The book begins with Leif Ericson and ends with the voyages of another Scandinavian, Larsen, and its chapters deal with well-known and less well-known men of England, France and other nations, including Scotland. The author, a native of Nova Scotia, helps natives of Scotland to remember, or discover, the achievements of Alexander Mackenzie, John Ross, John Stuart, John Richardson, James Clark Ross, Thomas Simpson, Robert Campbell, John Rae, Alexander Hunter Murray, and others.

The chapters, dealing with the individual explorers, are naturally grouped in four parts : The Valley of the St. Lawrence, Hudson Bay and the Plains, the Pacific Slope, and the Far North. There are biographical notes at the end of this fascinating book, also a bibliography, index, and end-paper map. A wide circle of readers on this side of the Atlantic, especially in Scotland, will relish *The Discovery of Canada.* J. H. K.

OCEANIA

The Pacific World. Edited by FAIRFIELD OSBORN. Demy 8vo. Pp. 218. Illustrations and sketch-maps. London : George Allen and Unwin Ltd., 1945. *Price* 12*s.* 6*d.*

Although a British printing, this is essentially an American book. Comparisons are drawn solely with the United States. The introduction makes it clear that the purpose of the book is to awaken the interest of the 'G.I.' stationed in the Pacific area.

Indonesia is included in the Pacific World, and the range of this work extends from the Aleutians to Western Australia and from Sakhalin to the Galapagos. Within the limit of about two hundred pages is found space not only for a description of one-third of the surface of the globe—land and ocean—with its peoples, flora and fauna, but also for a short chapter on the star constellations of the south.

The Pacific World is attractively written and should achieve its object. C. R. V. G.

From a South Seas Diary, 1938-1942. By Sir HARRY LUKE, K.C.M.G., D.Litt., LL.D. Crown 8vo. Pp. 255. Frontispiece. 84 plates. London : Nicholson and Watson, 1945. *Price* 12*s.* 6*d.*

Until Sir Harry Luke took up his Pacific appointment in 1938, his service had been confined to countries which were formerly part of the Ottoman Empire and to Malta. Those of us who have derived benefit and pleasure from his books on these ancient lands will approach his newest certainly with keen interest but possibly also with a touch of misgiving.

The atmosphere of little island 'kingdoms' in the Pacific is as far removed from that of the pre-1914 Middle East as *The Tempest* from Shakespeare's tragedies, but the author has succeeded in capturing the one as completely as the other.

It is no disrespect to a former High Commissioner of the Western Pacific to say that he has approached parts of his domain in the spirit of an overgrown schoolboy, for some of these small islands just cannot be taken seriously, and it is because of their absurdities that they win our affections. *From a South Seas Diary*, however, contains serious matter as well as light. Its accounts of Tikopia, Rotuma, and other almost unknown islands of the 'Polynesian Fringe' are valuable additions to the scant literature on this subject.

C. R. V. G.

World's End: Life and Laughter in the South Seas. By Capt. J. R. Grey, F.R.G.S. 8½×5½ inches. Pp. 167. 13 photographs. End-paper sketch-maps (Vanuambalavu and Tetiarah Atoll). Melbourne: Robertson and Mullens Ltd., n.d. *Price* 9*s*.

World's End covers two years of copra planting in the Society Islands and the Fijis. Much space is rightly devoted to the serious side of running a coconut plantation, but Capt. Grey is also able to enjoy life. He has a good deal to say about conditions in Fiji. The views he expresses are essentially those of the planter, but will be widely shared by many as long as tropical dependencies continue to be exploited for the benefit of the white.

C. R. V. G.

Alone over the Tasman Sea. By Francis Chichester. Introduction by Group Captain Frank D. Tredrey. Crown 8vo. Pp. 314. 24 photographs. 4 charts. London: George Allen and Unwin Ltd., 1945. *Price* 10*s*.

This is a new edition of *Seaplane Solo*, published in 1933 [see *S.G.M.*, 49 (5): 315]. Chichester's 1931 flight from New Zealand to Australia is a classic, worthy of comparison with Lindbergh's solo across the North Atlantic of four years earlier. C. R. V. G.

EDUCATIONAL

The Geography of World Air Transport. By J. Parker van Zandt. 9×6 inches. Pp. viii+67. 19 figs. End-paper maps. America Faces the Air Age, Vol. 1. Washington, D.C.: The Brookings Institution, 1944. *Price* $1.00.

Air Transport. By E. D. Weiss, Ph.D., D.Sc. Crown 8vo. Pp. 59. 17 illustrations. The New Era Books, No. 1. Glasgow and London: Art and Educational Publishers Ltd., 1946. *Price* 2*s*. 6*d*.

These two small books cover generally the same ground and are complementary in that Dr. Weiss deals with air transport from the British point of view while Dr. van Zandt presents the American viewpoint. We heartily commend to our readers the comprehensive accounts so succinctly given by the authors, and advise teachers of geography to make themselves familiar with the conditions that govern the development of travel and transport by air in its geographical, economic, political, and technical aspects.

Dr. van Zandt reminds us that "Mercator wall maps have hung before us so long in classrooms, lecture halls, and offices that their untruths are in our very blood," and Dr. Weiss, referring to the undue stress on speed in air transport, points out that "when aviation is compared with other means of transport emphasis is placed on the 'saving of time' which the aeroplane can achieve and thus the question gains a different aspect." Other geographical factors dealt with are the question of great-circle routes, the relative uselessness of North Pole routes, the supremacy of routes over land surfaces, and the war use of oceanic islands as air-stations.

These and many other controlling principles must give teachers pause to think long and carefully over the presentation to young students in its true perspective of this new and rapidly expanding mode of transport. Both books are illustrated with maps, diagrams, etc., and include useful bibliographies.

J. H. B.

Principles of Agricultural Botany. By Alexander Nelson, B.Sc., Ph.D., N.D.A. Demy 8vo. Pp. xvii+556. 182 figs. 17 colour plates. 128 half-tone plates. Edinburgh and London: Thomas Nelson and Sons Ltd., 1946. *Price* 35*s*.

Thomas Carlyle, referring to the literary output of his day, spoke of the 'relentless cataract of ink.' What he would have said of the present-day output baffles the imagination. This plethora is as obvious in the scientific as in the literary world, and it is no small achievement to have condensed and compressed the result of so much modern work into the text-book under review. Condensation, however, is sometimes apt to be accompanied by a certain lack of clarity and coherence, but such faults are conspicuous by their absence, for, while the explanations given in this book have in them not a redundant word, they are models of clear synthetic expression.

At the beginning of the book there is a friendly handshake in the address 'To the

Student,' containing paragraphs packed with wisdom on 'How to Use the Book,' 'Work in the Laboratory and Field,' 'Preparing for an Examination,' and 'Further Work in Botany.' The text proper is divided into four sections: (1) Morphology and Anatomy, (2) Physiology, (3) Negative Factors in Food Production, and (4) Heredity, Evolution and Classification. An original note is struck in the first chapter, 'Food in General and its Several Uses,' and this insistence on the plant as a foodmaking organism is the undertone of the publication. In the section on Morphology and Anatomy much is necessarily a restatement of what has been said in earlier text-books, but which cannot be omitted from any text-book. Such matter, passing through a fresh mind, is presented with a certain novelty and the verbal presentation is, in this as in all sections, immensely helped by the illustrations. The line drawings are of great clearness, simplicity and fidelity, the photographs vivid and typical and there are several coloured plates of unusual beauty, particularly some plates of microscopic sections. The section on Physiology is outstanding, and it is in this section, particularly, that the modernity of the work is visible. For example, among other things, the physics and physiology of the intake, transport and excretion of water by the plants are here set forth. The processes are by no means so simple as the older botany taught, and the mysteries of the water-relations of the plant, revealed by recent research, are indicated with apt analogies and great economy of language.

It is impossible to go into detail regarding all the sections, but it should be noted that the practical side of agricultural botany gets full treatment in such portions as those dealing with seed, weeds, grasses, pasture and the principles underlying manuring. Numerous cross-headings throughout the book make for easy reading and reference. Another new and welcome feature is the guidance toward further reading, given as a list of references at the end of each chapter and in a list of abstracting journals. It is never too early to introduce the student of university standard to the greater world of science, to let him see knowledge in the making and listen-in to the clash of scientific opinion.

While directed mainly to the student involved in problems of food production, this text seeks also to serve those whose interest lies in the field of world botany and its impact on man. The geographer will read much of what is here written on plant adaptation, crop distribution, and kindred subjects, with profit.

Finally, the volume under review is a splendid example of Edinburgh book-production, in format, paper, printing, binding and all that makes for quality. The price is definitely moderate, considering present difficulties and costs. To anyone interested in agricultural botany, one is inclined to repeat the exhortation of the late Dr. Alexander Whyte (when commending to his congregation some religious classic): "Sell your bed and buy that book; sell *two* beds!" W. B.

GENERAL

Patrick Geddes: Maker of the Future. By PHILIP BOARDMAN. Introduction by Lewis Mumford. Med. 8vo. Pp. xix+504. Illustrated. Chapel Hill: The University of North Carolina Press, 1944. London: Humphrey Milford, Oxford University Press. *Price* $5.00 or 30*s*.

To those of us who knew Patrick Geddes this book is most welcome; it recalls many of his characteristics and much of his teaching; it reminds us, too, how far we have strayed from the road he showed us. It is not a mere eulogy: in places it is a little too dramatic, but occasionally it is critical. It is a fair but incomplete estimate of P. G. Perhaps no one man could write with justice of every aspect of his amazing versatility. First and foremost, P. G. was a teacher: his spoken words inspired his hearers; his written words —and they were many—carried less ready conviction. He could be obscure and hard to follow in his articles and books, but he never lacked in personal contact.

Much of his inspiring personality shows in these pages, and, above all, his essentially constructive outlook, his insistence on retaining and re-using what is good, and his avoidance of mere iconoclasm even in his strictures on the outworn traditions of our university system: in fact, the outlook of the evolutionary biologist. While P. G.'s work in building university halls, initiating sociology and effective town-planning is stressed, and rightly so, one might add that he was the source and inspiration of nearly all that is most vital in modern geographical teaching. Few teachers have had a wider or more appreciative audience, and few have made a deeper mark on several generations of students. R. N. R. B.

Man's Most Dangerous Myth: The Fallacy of Race. By M. F. ASHLEY MONTAGU. Foreword by Aldous Huxley. Demy 8vo. Pp. xvi+304. New York: Columbia University Press. Second edition, 1945. *Price* $3.25.

The title of this book indicates the author's purpose—to contribute towards the eradication of the popular conception of 'race,' a conception suffused with prejudice based on the assumption that certain differences of outward physical characteristics and of cultural pattern are associated with differences of mental and moral equipment.

An examination of the historical development of 'racism' and of its biological, psychological, genetic and social content convinces the author that the word 'race' should

cease to be used in its ordinary context, and should be replaced by more definite words which would describe more accurately those differences usually termed racial. He suggests that 'social caste' describes what is known as 'race' in its cultural setting and 'ethnic group' in its biological setting.

The evidence drawn from many fields of scientific research is gathered together here and is sufficiently conclusive to justify the sub-title of the book—the fallacy of race, and the myth that culture and social behaviour is a reflection of inborn traits, has yielded such tensions in national and international life that it may justly be regarded as man's most dangerous myth.

Written primarily for America with its negro problem in the South and its Asiatic problem in the West the book makes a timely appearance here where the disease of anti-semitism has shown a marked tendency to spread from Central and Eastern Europe since the end of the war.

The author recognises that social prejudices are so deeply rooted that the teaching of facts about the fallacy of 'race' is not sufficient to eradicate them. His hope of overcoming race prejudice lies in a re-orientation of our—and the American—system of education wherein teaching "becomes part of a planned, integrated, complete experience in the meaning and significance of humanity," and he exemplifies this in an appendix giving an outline of the Springfield Community-School Plan.

The chaos in Europe to-day, where most of the lights of democracy have gone out, is largely a result of the stimulation of unsound and disastrous 'racial' theories, and all who are alive to the need of preserving and developing democracy should read this book.

S. C. F.

Geographical Essays. By VAUGHAN CORNISH, D.Sc. Demy 8vo. Pp. 82. 2 maps. London: Sifton, Praed and Co. Ltd., n.d. *Price* 10*s.*

The passage of time has not withered the merit and charm of the addresses and essays now collected in a little volume which is dedicated to R. N. Rudmose Brown. Five essays (The Geographical Position of the British Empire, The Strategic Aspect of the Panama Canal, The Fields of France in 1914-18, Constantinople and Its Crossways, and The Clash of Colour) are representative of the author's interest in political geography. The three essays (Harmonies of Scenery, The Preservation of Scenic Beauty, and The Preservation of Crown Lands as a National Park) which form the second part of the book exemplify his valuable contribution towards educating the nation to appreciate its heritage of scenery.

J. H. K.

Geology in the Life of Man: A Brief History of Its Influence on Thought and the Development of Modern Civilization. By DUNCAN LEITCH, D.Sc., F.G.S. Fcap. 8vo. Pp. x+118. 31 figs. The Thinker's Library, No. 108. London: C. A. Watts and Co. Ltd., 1945. *Price* 2*s.* 6*d.*

The first half of this little volume is devoted to a lucid and pleasantly written sketch of the principles and historical foundations of geology. There follow brief accounts of the geology of fuels, ore-deposits, and water-supply, and a chapter on 'Mineral Resources and the Atlantic Charter.' The book closes with a description of the functions of H.M. Geological Survey, the geological societies, and geological teaching in schools and universities. Notice is taken of the work of distinguished amateurs.

Only one serious criticism of the book can be made—it is much too short. Publishers and author should consider at least doubling the present size of the volume, taking the opportunity of discussing some of the principles more fully and perhaps expanding the economic side to include such topics as soils and road and building materials.

A. M. C.

Natural Principles of Land Use. By EDWARD H. GRAHAM. $8\frac{1}{2}\times5\frac{1}{2}$ inches. Pp. xiii+274. 32 plates. New York: Oxford University Press, 1944 (Second Printing, 1946). *Price* $3.50 or 16*s.*

In his introduction, appropriately called 'A Fresh Horizon,' the author refers to the complex nature of man's environment and to the need to see it in different lights before its true design and real worth can be appreciated. In particular, "to achieve a lasting economy, man must consider all the effects of his operations on the land." As a result of spectacular damage and deterioration in wide areas of their land and the absence of fresh areas of virgin land, thoughtful people in America are coming to realise that the continued welfare of their society depends primarily upon how wisely they use their land. Moreover, as Dr. Graham points out, "the present population of the world makes it necessary to plan land use in every continent, for yields of all products of the land depend in large measure upon appropriate management methods."

The inevitable change from *laisser faire* to managed use in the interests of humanity will bring with it a change in management which will necessitate a reoriented social attitude towards the land and the disposition of its products. However, the book does not deal primarily with this aspect, but chiefly with the biological aspects of land use, with the principles

which should guide the new technique of land management, and the outlook which should characterise the associated new technician, the land manager. The latter should understand not only the nature of the environment—climate, soils, topography—and its effects, but also the nature of living things as individuals and as communities and their effect upon one another. A large part of the book is taken up with the ecological principles of which he should be a master, stress being laid on the dynamic concept of vegetation and its associated animal life. Dr. Graham is careful, however, to point out that some of these principles and their application to land management are still in the experimental stage.

The author does not devote space to the study of physical factors, as space is limited and this has been done by others, but, after discussing the biological principles at some length, he devotes a chapter to the study of the land and the practical value of classifying it according to use capabilities, since one of the major tasks of the land manager is the determination of the best use of each parcel of land according to its long-time productiveness. The eightfold classification of the U.S. Soil Conservation Service is given.

In subsequent chapters, the author discusses the application of biological principles of land management to farms, forests, pastures, wild life, and inland waters. He stresses particularly the need to examine all steps in the light of their manifold effects upon the area concerned and on adjacent areas, and to avoid steps which may seem obvious when the problem is viewed in too narrow or short-term a manner, but which would prove deleterious in the long run. There are short chapters devoted to the need of careful study and experiment before exotic plants or animals are introduced, different methods of controlling undesirable plants and animals, and plant and animal diseases.

In the final chapter, on the land and human welfare, Dr. Graham stresses man's failure to realise the effect of soil condition on the quality of food, whether it be a plant product, such as grain or fruit, or an animal product, such as milk or cheese. He emphasises the need, in this age of specialisation, for co-ordination and synthesis and an appreciation of relationships in thinking, and the importance of a broad outlook, and an appreciation of the relation of specialised knowledge to human welfare, by the applied biologist and other technicians, if they are to be fully successful.

This is a thought-provoking and timely book, suitable both for the professional geographer, planner, agriculturist or forester and for the thoughtful general reader. Though his treatment refers mainly to American conditions, the author's principles and many of his practical suggestions should be of use to us in our small, densely populated island where the need to appreciate inter-relationships, to balance different factors, and to use every part wisely is even more urgent than in the U.S.A. The book is made more valuable by its extensive bibliography, and more interesting as well as instructive by its many useful, clear and well-documented photographs. C. P. S.

MAPS

Maps for the National Plan. Prepared by The Association for Planning and Regional Reconstruction. Fcap. folio. Pp. 119. 41 maps. 5 diagrams. London: Lund Humphries and Co. Ltd., 1945. *Price* 15*s.*

To a great extent this publication fulfils its object—to provide a background for discussion and criticism of plans for post-war reconstruction. It rightly lays emphasis on the need for a solid factual basis to planning, and usefully indicates the scope of the necessary research. However, the scale of the maps throughout is too small to do full justice to the material.

The section illustrating the Barlow Report has two maps, entitled 'Ill-Balanced Industry 1931' and 'Women in Industry 1931,' in which the Scottish part is left blank but for the words 'Information Not Yet Available.' It must be admitted that Mr. Smailes, from whose work the map was taken, had not completed it for Scotland; but all the necessary material may be found in the 1931 Census, available to anyone willing to put the data into map form.

Yet this publication remains the only work of its kind so far and a reminder of the amount of expert mapping that must be done before we can claim as a nation to have a co-ordinated visual record of our resources and our state of being. M. V.

Tectonic Map of the United States. Prepared under the direction of the Committee on Tectonics, Division of Geology and Geography, National Research Council, Chester R. Longwell, Chairman. 80×50 inches. Printed in 7 colours, on 2 sheets. Scale 1 : 2,500,000. Tulsa, Oklahoma: American Association of Petroleum Geologists, 1944. *Price* $2.00 (rolled in mailing tube); $1.75 (folded in manila envelope); $1.50 (in lots of 25 or more, rolled or folded).

Geologists and geographers everywhere will be grateful to the American Association of Petroleum Geologists for the publication of this splendid tectonic map of the United States. Conceived as long ago as 1922, active work began in 1934 and the map was completed ten years later. The scale, 1 : 2,500,000, is the same as that of the *Geological Map of the United States* published by the United States Geological Survey in 1932, a happy

arrangement which makes reference from one map to the other both easy and accurate. One index map shows how the country was divided into fourteen areas for each of which various members of the Tectonic Committee of 1922 were responsible, and another the areas covered by structure contours on various horizons in the Cambrian, Ordovician, Devonian, Mississippian and Pennsylvanian (Carboniferous), Permian, Trias, Cretaceous, Eocene, Miocene, and Pliocene Systems. It has, of course, been impossible in so great an undertaking to give a complete list of published and unpublished sources of information, but an extended note on the sheet gives some idea of the hundreds of geologists and publications consulted. The chairman of the Tectonic Committee was Chester R. Longwell, and Philip B. King, vice-chairman, was responsible for the final arrangements for collation and printing.

Symbols and colours have been so carefully chosen that clarity is never sacrificed in a map carrying so great a wealth of tectonic data. Well-differentiated symbols representing low- and high-angle faulting, sharp and open anticlines, domes and synclinal axes are shown in black. Structure contours (datum sea-level) are printed in brown and pick out tectonic basins and domes. As might be expected, the structural featues of the "Older" and "Newer" Appalachians, represented in wonderful detail, dominate the eastern, Atlantic area, and the great batholiths and lava-fields of Mesozoic and Tertiary age the Pacific Cordilleran belts. Tertiary and Quaternary volcanoes are printed in bright red. It is useful to find the base of the coal-rich Pennsylvanian sedimentary rocks traced in blue stipple. Submarine contours off both coasts show well the position of the much-debated submarine canyons.

These brief notes do scant justice to the fine accomplishment represented by this map. Fortunately, a full explanatory note by Professor Longwell, published in the *Bulletin of the American Association of Petroleum Geologists*, Vol. XXVIII (1944), pp. 1767-1774, entitled 'Tectonic Map of the United States,' can be readily consulted. A. M. C.

THE NATIVES OF TIERRA DEL FUEGO

At a special meeting of the Society and the Scottish Anthropological and Folklore Society on October 18, 1946, Professor Alejandro Lipschutz, Director of the Department of Experimental Medicine at Santiago de Chile, lectured on the results of a Scientific Mission carried out early in 1946 to study the physical anthropology of the tribes of the archipelago of Tierra del Fuego.

The records made were chiefly photographic but included blood tests as well; and the persons studied comprised both the small remnants of presumably pure-blooded individuals belonging to the three indigenous tribes: the Yámana (Yáhgan) inhabiting chiefly the island of Navarino, the Ona on the Atlantic coast of Isla Grande (the main island), and the Alakalufs who wander in their canoes among the southern channels. Careful study was also given to many persons with partially European ancestry.

One of the objects was to test the possibility that the Fuegian tribes have affinities with the Australian aborigines, as has been suggested. While it is regarded as possible that occasional non-American contacts have had some influence, the Mission came definitely to the conclusion that the tribes are derived from South America. Contrary to an earlier report by Rahm that the Yámana mostly were of blood group B, the Mission found that about 75 per cent. of the individuals belonging to all three tribes were of group O, like the American Indians in general. All the individuals who belonged to non-O groups (A, B, and AB) were found to have had some white ancestors.

Professor Lipschutz paid a high tribute to the intelligence of the tribes and referred to the remarkable way in which they had become adapted to their geographical environment prior to the settlement by Europeans. A. G. O.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

PROCEEDINGS

Meetings of Council were held on September 20th and November 12th, 1946.

Obituary.—The late Robert T. Skinner, M.A., F.R.S.E., joined the Society in 1904. He was elected a Member of Council in 1919, and a Vice-President in 1931.

He did great work at Donaldson's Hospital in organising the teaching of the deaf and dumb, but his chief interest lay in historic Edinburgh and in interpreting the Royal Mile to visitors.

As we know, he maintained a promise and has bequeathed to the Society the sum of One Hundred Pounds.

To us there remains the recollection of a very lovable personality.

Treasurer.—A letter from ALEXANDER HARRISON, C.A., F.R.S.G.S., tendering his resignation as Treasurer of the Society, was read.

The letter was received with regret.

Sir D'Arcy W. Thompson, C.B., D.C.L., D.Litt., F.R.S.—The Chairman stated that it was fitting that we took this opportunity to record the distinguished service which Professor Sir D'ARCY THOMPSON has rendered to this Society.

For four years he has acted as our President. He travelled from St. Andrews for each meeting irrespective of the weather, and sometimes it was not clement.

His introductions of our lecturers in the Usher Hall, his references to their interests, his notes at the end of each lecture, could not be surpassed. They were inimitable.

Each one of us marvelled at his knowledge of many sciences, his memory of men and events, his grace of mind and courtesy of language, his youthful outlook at the age of 86—an embodiment of the old adage that it is only in youth that a year is a year. He has served this Society well as President.

Presentations.—It was intimated that the Director General of the Ordnance Survey is presenting a complete set of the One Inch Map of Scotland, mounted on linen and folded, the latest form of the Popular Edition, incorporating the National Grid.

The Hydrographer, Admiralty, has sent a complete and up-to-date set of Sailing Directions. This comprises 74 volumes.

ANNUAL GENERAL MEETING

The Annual General Meeting was held in the Society's Rooms in Edinburgh, October 9th, 1946, Sir Hugh McPherson presiding.

The Annual Report of the Council was submitted by Mr. John Bartholomew and, on the motion of Mr. R. Rendal Clarke, seconded by Mr. David Paton, unanimously adopted.

The Financial Statement was submitted by Mr. Alexander Harrison, and its adoption was moved by Mr. D. Alan Stevenson who paid tribute to the Treasurer for the valuable services he had rendered during the session. This was seconded by Mrs. Katherine L. Addison-Smith.

The list of nominations of Office-Bearers recommended by the Council was read by Mr. John Bartholomew, Hon. Secretary, as follows :—

"That Professor Alan G. Ogilvie, O.B.E., B.Sc., be elected President in succession to Prof. Sir D'Arcy W. Thompson, C.B., D.C.L., F.R.S., who had completed his term of office ; that Mr. Robert Grant be re-elected Chairman of Council ; and that Sir D'Arcy W. Thompson ; Mr. William O. Leitch ; the Rt. Hon. The Earl of Wemyss and the Rt. Hon. The Earl of Selkirk be elected additional Vice-Presidents.

"That the following Vice-Presidents serve on the Council, 1946-47 :—Sir Hugh McPherson ; Rev. Archibald E. Robertson ; Arthur W. Russell, W.S. ; Sir Thomas B. Whitson ; Miss Ella Christie ; Dr. Douglas Guthrie.

"That the following Members of the Society be elected to fill the vacancies existing on the Council :—Sir Edward B. Bailey, M.C., F.R.S. ; Ronald Miller, Ph.D. ; Miss Hall Sawers ; William Latimer, C.A. ; Henry M. Paton ; Iver R. S. Salvesen ; William Burns, C.I.E., D.Sc. ; John B. Fleming, M.A. ; Francis D. N. Spaven, M.A.

"That the Chairmen of the Branches be re-elected :—Glasgow : Lt.-Col. John Johnston, O.B.E., T.D., M.A. ; Aberdeen : John McFarlane, M.A. ; that George A. Cumming, M.A., Ph.D., be elected Chairman of the Dundee Branch ; and that the other honorary Office-Bearers be re-elected. It was resolved to nominate James A. Robertson-Durham, O.B.E., B.A., C.A., Auditor, for re-appointment."

The recommendations were approved.

The Chairman thanked the retiring Members of Council who had completed their term of office :—Alexander C. Stephen, D.Sc., F.R.S.E. ; Norman B. Stewart, M.B., Ch.B. ; Miss Catherine P. Snodgrass, M.A., Ph.D. ; Harold K. Salvesen, M.A. ; Arthur Jamieson, M.C., M.A.

The Chairman in his remarks paid tribute to the retiring President, who was prevented from attending by another engagement. He referred to Sir D'Arcy W. Thompson's encyclopaedic knowledge, fluency of speech and wonderful vitality, and said that he had rendered most outstanding services to the Society during his four years of office.

He congratulated the Society on its great increase of Membership and hoped for a still further increase.

He also referred to the great loss the Society had sustained by the deaths of Dr. James Watt, John W. Gourlay, John Watt Butters and Robert T. Skinner.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

ORDINARY REVENUE AND EXPENDITURE ACCOUNT

For Year to 30th June 1946

Subscriptions—		
Ordinary	£2054 6 0	
Schools Corporate	103 10 0	
	£2157 16 0	
Life Membership, Diploma, and Entrance Fees—		
Portion applicable to Revenue	67 0 0	
Government Grant	150 0 0	
Donations	232 8 0	
Dividends and Interests	131 7 3	
	£2738 11 3	

Magazine—Expenses of Publication, etc.—			
Printing			£420 8 11
Editor			75 0 0
Illustrations			184 16 6
Maps			7 15 0
Wrappers, Index, and Miscellaneous			58 10 9
Postages			40 13 0
			£787 4 2
Less—Magazines sold	£182 19 0		
Advertisements	32 5 0		
			215 4 0
			£572 0 2
Rooms—Upkeep of:—			
Rent, Rates, and Insurance	£221 1 5		
Cleaning and Repairs	74 1 11		
Heating and Lighting	31 5 9		
	£326 9 1		
Less—Rents received for hire of Rooms	£75 17 6		
Donations	15 0 0		
	90 17 6		
			235 11 7
Lectures	£485 0 11		
Less—Received for Tickets sold	189 1 6		
			295 19 5
Salaries			720 8 6
Auditor's Fee			10 10 0
Superannuation Contributions			117 14 8
Library—Books and Furnishings	£41 0 2		
Provision for Books and Maps	50 0 0		
Provision for Map Room Furnishings	200 0 0		
			291 0 2
General Printing			64 16 6
Stationery			91 5 7
Telephone—Rent, Calls, and Telegraphic Address			35 16 3
Addressograph			22 2 7
Medals			11 9 1
Postages			92 18 5
Donations			7 2 0
Miscellaneous			25 15 6
Lantern Slide Cabinet			29 5 0
Lantern Slide Boxes			20 15 0
			£2644 8 5
Surplus for year			94 2 10
			£2738 11 3

ASSETS

I. Investments held by the Society—			
Life Membership, Diploma, and Entrance Fees Fund—			
£726, 10s. 3d. 2½% Consolidated Loan			£495 13 6
£650 Guaranteed 2¾% Stock			504 6 6
			£1000 0 0
General Fund—			
£1391, 18s. 2½% Consolidated Loan	£807 9 10		
£1375, 4s. 8d. Guaranteed 2¾% Stock	933 19 11		
£400 3% Defence Bonds	400 0 0		
		2141 9 9	
Dr. J. G. Bartholomew Memorial Donation—			
£890 Guaranteed 2¾% Land Stock		500 13 6	
Dr. J. G. Bartholomew Bequest—			
£500 3½% Conversion Stock		500 0 0	
J. E. Touche Bequest—			
£560, 16s. 9d. Guaranteed 2¾% Stock	£420 13 6		
Early Map Stock (Balance at 30th June 1945 less sales during year, £5, os. 6d.)	61 17 6		
Cash in Hand	17 9 0		
		500 0 0	
II. Sundry Debtors		26 8 6	
III. Cash in Bank and on Hand		437 2 5	
		£5105 14 2	

I. Accounts Outstanding			£336 17 2
II. Prepaid Subscriptions			15 2 0
III. Donations Received for Specific Purposes, Unexpended			120 0 0
IV. Glasgow Equipment Fund—			
Balance at 30th June 1945			80 4 0
V. Library Reserve—Binding		£300 0 0	
Maps and Books		50 0 0	
Map Room Furnishings		200 0 0	
			550 0 0
VI. Funds of the Society—			
(a) **Life Membership, Diploma, and Entrance Fees Fund—**			
Balance at 30th June 1945		£1034 0 0	
Sums received during Year		300 0 0	
		£1334 0 0	
Less—5% whereof transferred to Revenue Account		67 0 0	
		£1267 0 0	
(b) **General Funds—**			
Balance at 30th June 1945	£2642 8 2		
Add—Surplus for Year	94 2 10		
		2736 11 0	
			4003 11 0
			£5105 14 2

LIVINGSTONE MEDAL FUND

Funds at 30th June 1945			£1514 1 7
Income Received—			
Interest on Stocks			22 4 3
			£1536 5 10

Funds at 30th June 1946—			
£133, 15s. 6d. Guaranteed 2¾% Stock			£100 10 5
£1390, os. od. 3% Savings Bonds 1965/75			1390 0 0
Cash in Bank			45 15 5
			£1536 5 10

DR. M. I. NEWBIGIN MEMORIAL

Funds at 30th June 1945			£301 1 6
Income Received—			
Interest on Stock			9 18 0
			£310 19 6

Funds at 30th June 1946—			
£360 Guaranteed 2¾% Stock			£294 11 4
Cash in Bank			16 8 2
			£310 19 6

Edinburgh, 4th October, 1946.—I have examined the Accounts of the Royal Scottish Geographical Society for the year to 30th June 1946, of which the above is an Abstract, and compared them with the Vouchers and Instructions thereof, and I find the whole to be correctly stated and sufficiently vouched and instructed.

J. A. ROBERTSON DURHAM, C.A., *Auditor.*

REPORT OF COUNCIL

SIXTY-SECOND SESSION, 1945-46

1st July 1945 to 30th June 1946

The Council have the honour to submit the following Report :—

MEMBERSHIP

The changes during the session are as follows :—

On the Roll at 1st July 1945		1684
New Members		419
		2103
Deduct by Death	40	
„ Resignation	168	
		208
On the Roll at 30th June 1946		1895

The total Membership is analysed thus :—

Edinburgh Ordinary	1024	Edinburgh Corporate	7
Glasgow Ordinary	409	Glasgow Corporate	27
Dundee Ordinary	53	Dundee Corporate	2
Aberdeen Ordinary	35	Life Members	159
Honorary Members	5	Associates	30

Outside Area Members 144

MEDAL AWARDS

The following awards were made :—

THE SOCIETY'S RESEARCH MEDAL was awarded to Marcel Aurousseau, Secretary of the Permanent Committee on Geographical Names, for his valuable research upon the subject of nomenclature and on the proper transliteration of names from a wide variety of languages.

THE BRUCE MEMORIAL PRIZE was awarded to Lieut.-Col. P. D. Baird for his valuable survey and geological work with J. M. Wordie in North-West Greenland and Baffin Island in 1934, and with T. H. Manning's British Canadian Arctic Expedition in 1936-37, and subsequent exploration in northern Baffin Island and Bylot Island.

THE SCOTTISH UNIVERSITIES MEDAL was awarded to Agnes M. Maxwell, First in Geography (First Course), 1943-44, and highly placed in all subsequent Courses, 1944-46, Edinburgh University ; Isobel Pirie Thomson, First Place, Ordinary Class, 1945-46, Aberdeen University.

DIPLOMA OF FELLOWSHIP

The Honorary Diploma of Fellowship was awarded to Dr. Gilbert Grosvenor, President of the National Geographic Society and Editor of the *National Geographic Magazine* since 1901, in recognition of his great work in promoting the increase and diffusion of Geographical Knowledge.

MEETINGS OF THE SOCIETY

The Society held 40 Meetings during the session, 6 evening lectures in the Usher Hall, 12 Wednesday afternoon lectures in the Lothian Road Church Hall, 2 film shows for young people in the Synod Hall, 1 special evening lecture in the Lothian Road Church Hall, 6 in the Lyric Theatre, Glasgow, 5 in the Natural Philosophy Class Room, Aberdeen and 5 in the Training College, Dundee. They are listed in Volume 61, page 108, of *The Scottish Geographical Magazine.*

Library and Map Department

During the session 4528 books and 143 map sheets were issued to members, an increase of 218 books and 30 map sheets on the previous session.

The following additions were made :—347 books, 415 map and chart sheets, 25 reports and 37 pamphlets, an increase of 72 books and 25 pamphlets over the previous year. 56 books were presented by members.

The Directorate of Military Survey, War Office, has presented to the Society a complete set of maps published during the war years including maps published by the Army Map Service of the United States. This will constitute a magnificent addition to the Society's Map Collection. The set is likely to comprise forty to fifty thousand map sheets. They are temporarily stored at the Signet Library until accommodation is available in the Synod Hall. This will involve a considerable expenditure by the Society to make them available for reference purposes.

The Council thanks the donors of books, maps, and other presentations :—Miss I. Alexander, Dr. Ninian Bruce, J. E. R. Chalmers, G. F. Alan Evans, Rev. George Lamb, Prof. Herbert J. Fleure, Miss Margaret Leitch, Mrs. H. C. Upton, John MacKercher, Dr. Angus Macdonald, Mrs. John Mathieson, Miss Hilda Newbigin, Miss C. Nisbet, George W. Wright, Dr. Gilbert Grosvenor, Sir Norman and Miss Lamont of Knockdow.

They also desire to record their thanks to :—The Department of Health, Scotland, Planning Division ; the Hydrographer of the Navy ; the Permanent Committee on Geographical Names ; the Director of Geological Survey ; the Director, Naval Intelligence Division, Admiralty ; the Director of the Land Utilisation Survey ; the Kintyre Antiquarian Society ; the Royal Geographical Society, London, and the Inter-Service Topographical Department, Oxford.

Dr. Livingstone's Flag. The flag carried by Dr. David Livingstone in some of his travels through Africa has been given on loan to the Society by his great-grandson, Mr. Livingstone Bussell.

Lantern Slides. The Society's large collection of lantern slides and picture cards have been classified and arranged in sets by Richard T. Currall. Special storage cabinets have been provided.

The Scottish Geographical Magazine

The wars and their aftermath have been responsible for a drastic reduction in the number of issues and pages, Volume 61 comprising three numbers totalling 112 pages as compared with the twelve numbers averaging about 700 pages per annual volume issued from 1885 to 1915. However, the number of pages per issue has now been increased to 48, moreover the appearance and legibility of the text has been improved by reverting to a shorter line and wider spacing.

Existing conditions are still precluding wider distribution of the *Magazine*, through trade channels for instance, but there has been a gratifying increase in the number of subscribers both at home and abroad. It should be noted, however, that at present there are more subscribers in the U.S.S.R. than in the whole of Africa, and that subscribers in the U.S.A. outnumber those in the British Empire overseas.

Throughout the year it has been possible to secure articles on a wide variety of subjects, while the Scottish character of the *Magazine* has been maintained. The quality of the illustrations has been generally appreciated. Although necessarily limited, Notes and References have served to convey to readers an indication of current geographical activities throughout the world. As in former years, an essential and useful feature of the *Magazine* has been the section devoted to Reviews of Books.

The Council desire to record their indebtedness alike to the authors of signed articles and to the following who have assisted the Editors by contributing reviews or in other ways :—Lady Agnew ; Dr. John Anthony ; Miss A. J. Atkinson ; John Bartholomew ; Dr. J. Hamilton Birrell ; Dr. William Burns ; William L. Calderwood ; Roland E. Cooper ; Mrs. A. Cormack ; Richard T. Currall ; Dr. A. I. Dunlop ; James Y. Erskine ; Stanley C. Farrar ; W. A. Fisher ; G. F. Friend ; Dr. Arthur Geddes ; Lt.-Commdr. C. R. V. Gibbs ; Alexander T. Gibson ;

Robert Grant ; Dr. Douglas Guthrie ; Alexander Harrison ; James Hossack ; William O. Leitch ; H. C. Maitland ; Gordon Manley ; Dr. Ronald Miller ; Donald G. Moir ; Prof. Alan G. Ogilvie ; Miss Ann Parry ; Rev. James Reid ; Dr. A. M. Smith ; Dr. Catherine P. Snodgrass ; Dr. L. Dudley Stamp ; D. Alan Stevenson ; Dr. John B. Tait ; Dr. G. W. Tyrrell.

Place-names of Scotland Committee

The Place-names of Scotland Committee have continued to do good work.

Kirkland C. Craig, M.A., Lecturer in Celtic at the University of Edinburgh, was appointed Chairman in succession to the late Mr. John Mathieson.

Manuscripts have been received of Mr. Mathieson's Place-names of Sutherlandshire, and of the Rev. J. B. Johnstone's Place-names of Dunbartonshire.

There are at present 24 Members of a Committee. The Secretary is John D. Gardner, B.Sc., F.R.S.E., M.Inst.C.E.

Office-bearers

During the session the following appointments were made :—

Trustees.—John Bartholomew and David Alan Stevenson.

Hon. Map Curator.—Dr. Alexander R. Normand.

The Society's Representatives

The following Members were appointed to represent the Society :—

Association for the Preservation of Rural Scotland.—Sir Hugh McPherson ; Lt.-Col. John Johnston.

Scottish Council for National Parks.—Lt.-Col. Gordon Dalyell of the Binns.

Bruce Memorial Prize Committee.—James M. Wordie ; Harold K. Salvesen.

Carnegie United Kingdom Trust : General Council.—Robert R. Walls.

Joint Committee for Anthropological Research and Training.—Robert Kerr.

National Committee for Geography.—John Bartholomew.

National Trust for Scotland.—Professor Alan G. Ogilvie.

Permanent Committee on Geographical Names.—John Bartholomew.

Scottish National Memorial to David Livingstone.—Lt.-Col. John Johnston.

Donations

The total donations during the year amounted to £232, of which the following were made under covenant—£100 anonymously, £10 from Miss Newbigin and £105 from the late Dr. James Watt.

Obituary

It is with deep regret that the Council record the loss to the Society of forty Members by death, among them Dr. James Watt, trustee and Chairman of Council from 1930-33 ; John W. Gourlay, Chairman of the Glasgow Branch and Secretary and Treasurer of the Branch from 1910-41 ; and John Watt Butters, a past member of Council and for a term Convener of the Library Committee.

Since completion of this report the Society has sustained the loss of Robert T. Skinner, M.A., F.R.S.E., a Vice-President.